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Abstracts

(An explanation of the classification used in the Digest was published in the January (1949) issue (Vol. 6, No. 1) on the page facing the Index to Authors)

[133]

FIBERS A

Natural fibers A 1

Assessment of damage in wool materials. C. S. Whewell. *Textile Recorder 68,* 91, 92 (January 1951).

Mill measurements of damage to woolen fabrics may include such tests as tensile strength and elongation, but it is important to know that only very serious damage or degradation will be shown by these tests. Tests on single fibers may be used to show damage in a more refined way. The Speakman test consists in measuring the work required to stretch fibers 30 percent before and after treatment, the damage being expressed as the percentage reduction in work to stretch. But to assess the amount of degradation in any sample of unknown history requires a large number of measurements.

Determination of resistance to wet abrasion is a useful test, since it takes into account the particular structure of the material being examined. The loss in weight which occurs when the sample is boiled in a solution of 0.1 N sodium carbonate may often be used as a guide to the condition of the piece of fabric. Staining tests are useful, being used mainly on the basis that damaged fiber stain more deeply than the undamaged fibers. But precautions must be taken with this premise. For example, some of the change may be due to a prior chemical treatment that has decreased the dye affinity of the wool. It is important to understand that the various test methods vary in sensitivity. A table shows the degree of modification of several samples of wool boiled for one hour in hydrochloric acid solutions of various concentrations. A second table shows the resistance to abrasion of cloths treated in acid and alkaline solutions; while other tabular data are on the resistance-to-abrasion and the fluidity tests.

[134]

Breaking-twist and diameter of bundles of jute fiber and relations to spinning quality. B. K. Chakrabarti. *Indian Tex.J. 61,* 105-12 (Nov. 1950).

A series of experiments are described and data given on a number of samples of jute fiber bundles. Graphs are presented to show the various relationships which were obtained.

Color measurements of cotton. U. S. Department of Agriculture. (April, 1950).

See Front Section.

Cotton picker. Hugh A. Gamble (½ to Wm. Burris Smith USP 2 540 046, Jan. 30, 1951.

In a cotton picker movable along the side of a row of cotton plants, the combination comprising, a frame, a drum supported by the frame for rotation on a vertical axis, a series of rotatable picking spindles carried by and projecting outward through the drum, a spindle driving member mounted within the drum, a spindle driving element secured to the inner end of each spindle and engageable with the driving member, the rotatable spindles being axially movable in the drum to engage the spindle driving elements with the spindle driving member, a cam carried by the frame and extending around a portion of the periphery of the drum, the cam being closest to the vertical axis of the drum in a vertical plane through the axis of the drum and perpendicular to the direction of movement of the picker along the row of plants, and means extending between the cam and the spindles for moving the spindles axially to engage the spindle driving element with the spindle driving member in the vertical plane to initiate rotation of the picking spindles after the spindles have penetrated into cotton plants in the row.

Chemistry of jute fiber in relation to its technical aspects. H. Chatterjee. *Indian Tex. J. 61,* 38-43 (Oct. 1950).

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Discusses briefly the chemistry of retting, the chemistry of the cell-wall ingredients and the chemical structure of the jute fiber. The relationship between chemical composition and spinning quality is derived. The effects of chemical treatments such as acids, dilute and concentrated alkalis, and bleaching compounds on the jute fiber are cited.

Cuticle of wool. N. Gralen. *J. Soc. Dyers Colourists 66,* 465-70 (Sept. 1950).

Cites chemical, physical, and microscopic methods of studying the various portions of the cuticle of wool, which includes the epicuticle and the exocuticle. The specific properties of the various parts of the cuticle and their functions are described in detail.

Fiber characteristics in clothes. Gunnar Werner. *Textil Och Konfektion 6,* 14-17 (Aug. 1950); *in Swedish.*

Gunnar Werner, research assistant of the Swedish Textile Research Institute, reports on tests made concerning the heat and air-admitting qualities of wool cloth.

Humidity factor upon length quality of woolen goods. Eric Pettersson. *Textil Och Konfektion 6,* 18-19 (Aug. 1950); *in Swedish.*

Comparative humidity causes such differences in lengths of woolens that the ready-wear industry is now claiming new trade standards. Investigation in this direction is being carried on by engineer Eric Pettersson for the Men's Ready-Wear Council of Industrial Economy, a research group within the Swedish men's ready-wear industry.

Minor vegetable fibers: production. Walther Hoffmann. *Melliand Textilber. 30,* 209-12 (1949); *in German.*

The author reviews the minor vegetable fibers under the headings: 1) Bast fiber (nettle, ramie and Asclepias, Apocyanum and malvaceous species), 2) leaf fiber (yucca), and 3) new sources of flax and hemp. He argues that a new source of natural fiber should meet the following demands: 1) it should be cultivated on virgin land, 2) the yield of fiber should be high, 3) the fiber should have outstanding properties, 4) cost should be low and 5) the plant should yield valuable by-products.

Pressure roll for forming bonded fiber webs. John J. Smith (to Chicopee Mfg. Corp.) USP 2 530 407, Nov. 21, 1950.

Apparatus for making bonded fibers webs com-

prising in combination a pair of pressure rolls having elastic outer portions, the rolls being adapted to be rotated to feed a fiber web between them, the surface of each roll being composed of interspaced flexible elements having relatively high and relatively low compressibility respectively radially of the roll, and means for urging the rolls together to deform the surfaces into a substantially plane surface of contact between the rolls and to move the outer surfaces of the elements of high compressibility radially with respect to the surfaces of the elements of low compressibility, whereby the high compressibility elements will move radially with respect to the low compressibility elements as the surfaces of the rolls separate from each other in rotating.

Silk: moisture regain and strength. Werner von Rhein. *Melliand Textilber. 30,* 179-84 (1949).

Cocoon filaments examined in an air-conditioned room over the range 31-90% R. H. at 20°C showed a fall in breaking load from 17.7 to 13 g., or a range from 112.8 to 83.1% when the breaking load at 65% R. H. is taken as 100. Extension at break increased from 78.5 to 121.2% compared with that at 65% R. H. Divergent results recorded by previous workers are ascribed to their testing yarns and fabrics rather than filaments and to their failure to test a conditioned room. Silk responds too quickly to atmospheric changes for it to be sufficient to condition the material in a hygrostat before testing in an open laboratory.

Swelling of cotton in water. Anna T. Moore *Am. Wool Cotton Reptr. 65,* 14, 57, 59 (Jan. 25, 1951).

See *TTD* 7, 864.

Artificial fibers A 2

Cut filaments: fiber length determination. Hans Böhringer. *Melliand Textilber. 30,* 133-37 (1949); *in German.*

The authors start with the Johannsen-Zweigle method of producing staple fiber diagrams and the fiber-weight curve. The fiber-number curve which follows from these and checks on assorted samples is claimed to be inadequate for cut fiber and the author replaces it with his fiber cross-section curve. Four combinations of taking samples of fibers are discussed. The fiber-length diagram is examined and interpreted as an indication of cutting machine efficiency and a fiber length with frequency diagram as showing the distribution of staple length in the yarn. The

author's conception distinguishes clearly between these two. His scale of qualities of fiber length lays down the permitted deviation from the properties discussed and also the minimum extent of the "uniformity zone". A new formula for finding the fiber weight is introduced. There are a number of diagrams.

Effect of structure on the fiber properties of linear polymers. Jas. H. Brewster. *J. Amer. Chem. Soc. 73,* 366-70 (Jan. 1951).

The theory of the influence of the stereochemical orientation of side-chains on polymer properties is discussed. Polyurethans, polyamides and "dimethyl Nylons" are considered.

Elastic yarn. Boutwell H. Foster (to U. S. Rubber Co. USP 2 539 300, Jan. 23, 1951.

An elastic yarn fine enough to be knitted and woven to from light weight elastic fabrics, comprising a stretchable rubber core that is completely surrounded by a thin continuous jacket formed of a tough stretchable film of nylon deposited as a coating on the rubber core so as to hold the core partly stretched when the elastic yarn is relaxed, and adapted to contract and stretch readily with the core to more than twice the length of the relaxed elastic yarn.

Improvement in the stability to water and boiling of casein and other protein fibers. H. Brintzinger & H. Wolff. *Kolloid Z. 118,* 28-32 (July 1950).

The water absorption and resistance to boiling of synthetic and natural protein fibers can be improved by treatment with certain metallic salts. Experiments are described showing the effect of Cr compounds (one- and two-bath processes) potassium titanium oxalate, and sulphates.

Information on properties and processing of synthetic fibers. Anon. *British Rayon & Silk J. 27,* 52-53 (Jan. 1951).

See Front Section.

Mixed staple fibers. Henry C. Van Brederode (to Camille Dreyfus) Can. P. 470 266, Dec. 19, 1950.

An insulating material in the form of a strongly cohesive batt adapted for use as an interlining in garments and the like to impart substantially permanent thermal insulating qualities thereto, comprising a substantially homogenous fibrous mixture comprising about two parts by weight of wool and about one part by weight of crimped staple

fibers having a basis of cellulose acetate.

Orlon contributes importantly to canvas goods industry. Bruce S. Farquhar. *Am. Wool Cotton Reptr. 65,* 14-15 (Jan. 11, 1951).

See Front Section.

Staple fiber bales: conditioning. F. Walz & H. Köb. *Melliand Textilber. 30,* 7-12 (1949); *in German.*

The German Standard Specification DIN DVM 3821 for conditioning staple fiber bales is discussed in its practical applications. The authors suggest that the weighing of the whole of the bales of a consignment of raw material be dispensed with and state that the same commercial weight is obtained by weighing only the test bales and finding the total by calculation. This is borne out by worked examples of a consignment of staple fiber bales calculated by both methods. The simplified method was found equally reliable for wool, cotton, and yarn shipments. It is recommended to use the procedure in the new edition of the standard specification.

Synthetic fibers development. Herbert Rein. *Melliand Textilber. 30,* 243-46, 299-301 (1949).

An account is given of the development of synthetic fibers since the production of the PeCe fiber in 1934 (claimed to be the first commercially produced synthetic fiber and then known as "WK-silk"). The fibers are reviewed by their method of production (polymerization, condensation, or poly-addition reactions), and the parallel development of nylon in the United States and Perlon in Germany is discussed. The characteristics of PeCe fibers and of Vinyon and Saran are compared, and the superior properties of polyacrylonitrile fibers are considered. It is pointed out that German polyacrylonitrile fibers were developed before Orlon came on the markets.

Synthetics favored to take over entire automotive field. J. R. Millan & N. J. Rakas. *Am. Wool Cotton Reptr. 65,* 23, 25, 65-6 (Jan. 11, 1951).

The use of 100% synthetic fabrics and blends of synthetics with natural fibers for automotive fabrics has resulted in decorative and colorful fabrics at lower cost. Synthetics have given satisfactory service, meeting the basic requirements for sun fastness, wear, cracking, water fastness, etc. Mention is made of the use of synthetic fabrics for sidewall material, seat backs, cushions, headling, carpet, and convertible sport topping.

YARN PRODUCTION B

Fiber preparation B 1

Expedites wool sorting. Anon. *Am. Wool Cotton Reptr. 65,* 35 (Feb. 8, 1951).

A work simplification program to expedite wool sorting and to improve the picking operation has lowered unit costs at the Wilton Woolen Co. Bales are opened at one end of a belt conveyor and their contents are dumped onto it, sorted with trucks available for rejects, etc., and delivered to bins by a series of belt conveyors. Stock is then moved from the bins to the picker room by trucks, of 500 to 1,000 pounds capacity, in which it is oiled with emulsion pumped from a new emulsion room. The picking operation is improved by lengthening feed aprons to a minimum of 6 feet, installing bit returners on the pickers, installing lumpers to service groups of pickers, and equipping each pair of pickers with a 50-hp. motor. Stock is blown from lumpers to 10,000 to 20,000 pound capacity storage bins or back to the pickers for further processing. The large trucks used for preliminary blending and oiling are used for feeding stock to the pickers.

ITT research points way to improved processing, better product quality. Anon. *Daily News Record, 24,* (Jan. 25, 1951).

See Front Section.

Pneumatic rack control for pickers maintains uniform tension on lap. Staff. *Textile Industries 115,* 120 (Feb. 1951).

A pneumatic rack control replaces the former friction-pulley tension system for the picker lap rack at Joanna Cotton Mills. It eliminates the use of a hand wheel for raising and lowering the loggerhead during the doff and startup. It saves some time for the picker operator, but its main action is the instantaneous application of proper pressure to the starting lap. This even pressure produces a lap that is completely useable at the card, thus removing the need for tearing off the last yard or so of lap.

The system works automatically. When the laps get full and the full-lap knock-off motion operates, the lap rack rises automatically so that the lap pin may be removed. On the startup, the operator steps on the foot pedal to start the machine; the lap rack automatically descends to its empty lap rack automatically descends to its empty lap position, and correct tension is maintained on the lap throughout the processing.

Precision picker knock-off developed at SRRL. George A. Pettit. *Textile World 101,* 153 (Feb. 1951).

See Front Section.

Carding and combing B 2

Driving mechanism for the rubbing motion of tape condensers of cards. Irvin Marsden (to Platt Brothers & Co. Ltd.) USP 2 539 028, Jan. 23, 1951.

In a card having a condenser with rubbing motion, a part fixedly secured to the frame of the engine at one side thereof provided with an arcuate slot means between the card and the condenser for transmitting motion to the rubbing motion, the means comprising gearing supported on the frame of the engine at the side thereof at which the part is positioned and including a pair of gear wheels disposed in radial alinement but out of mesh with each other, one of the gear wheels being mounted for ready removal for substitution of a gear wheel of different diameter, a pinion disposed between the gear wheels in mesh with both, the pinion being mounted on a shaft removably secured in the arcuate slot whereby the axis of the pinion may be moved thereby to bring the pinion into mesh with gear wheels of different diameters, a chain and sprocket drive between the cylinder shaft of the card and one of the gear wheels, and a belt and pulley drive between the other gear wheel and the rubbing motion.

Handling reworkable waste. V. E. Oleman. *Textile Bull. 77,* 70, 72 (Jan. 1951).

See Front Section.

Mechanism for operating a comb box on a card. Thomas B. Hunt, Marvin W. Odom, & James W. Garrett (to Odom) USP 2 539 081, Jan. 23, 1951.

In a mechanism for oscillating a comb shaft, a pair of supports arranged in spaced side by side relation, a comb shaft pivotally mounted through both supports and projecting outwardly from one of the supports, a drive shaft arranged in parallel spaced relation to the comb shaft rotatably mounted in the other of the supports having one end projecting toward the one support and terminating at a point between the supports, a disk positioned between the supports fixedly secured to the one end of the drive shaft, a crank plate positioned in face to face relation with the face of the disk adjacent the one support, means connecting the plate to the disk for sliding ad-

justment, an arm fixed at one end of the comb shaft between the supports, a pitman positioned between the other end of the arm and the crank plate in face to face relation with the crank plate, a crank pin extending through the crank plate and projecting toward the one support pivotally connected to one end of the pitman the other end of the pitman being pivotally connected to the other end of the arm for oscillating the comb shaft as the drive shaft is rotated.

New development in woolen carding — the Varga Breast. Anon. *Textile Recorder, 68*,109 (Jan. 1951).

See Front Section.

Reader comments on neppy cotton. Staff. *Textile Industries 115*, 200 (Feb. 1951).

Neps are made at the gin, manufactured on high speed dull beaters and insufficient picking machinery, and from too much oil spray; but dull card wire is the worst offender. Overloaded cards and fast doffer speeds contribute to this difficulty. Cylinder speed of 165 to 170 rpm, doffer speed of 8 to 9 rpm., and licker-in speed of about 425 rpm. are recommended. Attention to the emery fillet on grinder rolls for grinding wires is most important, and it should be kept dry and clean. Sharp wire points and good settings are both critical in good carding.

STA meetings cover carding, spinning and weaving. Anon. *Textile World 101*, 149, 151, 318, 320, 324 (Feb. 1951).

See Front Section.

Worsted carding. Anon. *Platts Bulltein 7, No. 5.* Purely as guides for mill use, the article gives illustrated settings, speeds and counts and crowns of wire for standard Bradford cards on 64s quality merino, Continental cards on 64s quality merino, cross-bred cards on 48s quality, twin burring cards on Australian types and twin burring cards on Cape types. The settings and speeds are said to facilitate gentle opening of fibers with minimum breakage. In general, settings should be as open as possible, depending upon the wool being processed.

Drafting and roving B 3

Comments on doff boxes. Staff. *Textile Industries 115*, 191, 193 (Feb. 1951).

In a letter to the editor, pointers to remember in using doff boxes are discussed. Production of the card room and spinning room should be balanced as nearly as possible so that roving frame operators do not have to wait for doff boxes when frames are ready to doff. When production is balanced, approximately 2 doff boxes of adequate size per roving frame should be adequate. If roving frame production exceeds spinning production, then 3 or 4 doff boxes should be kept on hand, and provisions should be made to properly stack roving in suitable compartments. The casters on all boxes should be checked and cleaned once a week, and the doff boxes should be kept clean so that the roving will not be damaged. Boxes for roving should never be used for anything but roving. Roving frame operators should keep spindle tops and bobbin tops clean so that greasy lint will not fall onto the roving when the frame is doffed.

Drawing frame, stop motion. D. Fraser & Sons. Brit. P. 623 203, May 13, 1949.

Stop motion device for drawing frame: device comprises detector which rests on sliver, and if the sliver breaks, drops and closes an electric circuit.

15% less variation at drawing. Staff. *Textile Industries 115*, 106-7 (Feb. 1951).

Ball-bearing drawing rolls installed at Avondale Mills resulted in a considerable reduction in sliver variation. Sliver variation dropped from 33-35% to 18% on 80 deliveries of drawing which ran with eight ends up on 1-1/32 inch Middling stock. Cleaner work and less fly were also reported. Other manufacturing advantages: quality of new sliver made possible single roving in spinning and greatly reduced the number and quantity of hank rovings run, thus making the mills' numbering system simpler and more flexible. Mfr: Ideal Machine Shops.

High draft system for porcupine drawing frames. Staff. *Textile Industries 115*, 211 (Feb. 1951).

A new superdraft for porcupine drawing frames for French and Continental spinning, developed by Textile Machines S.P.A.—Isotta Fraschini, is reported to greatly improve operation of porcupine drawing frames. The new system is claimed to increase draft and processing speeds, reduce sliver breakages and waste, give quality improvements, and eliminate at least one drawing operation. Mfr. Stellite American Corp.

Operation of the drawing frame. Robert Z. Walker. *Textile Bull. 77*, 65-6, 70 (Jan. 1951).

See Front Section.

Roller bearing top rollers. Anon. *Platts Bulletin*

7, No. 5. (1951).

See Front Section.

Spinning B 4

A special method for spinning slub yarns in the cotton-spinning mill. J. B. Visser. *Enka Breda Revue 4*, 164 (Dec. 1950); *in Dutch.*

In this article a method is described for spinning slub yarns by mixing long and short, commercially available rayon fibers on a normal long-staple spinning machine operating according to the cotton system.

Automatic cleaning pays off for Gastonia Combed Yarn Corp. W. A. Thompson, Jr. *Textile World 101*, 126-29 (Feb. 1951).

Card-room efficiency was increased 5% at one mill, and a direct labor saving of $9,000 per year was obtained in another mill after the installation of automatic cleaning. Cleaner and higher quality yarn also resulted from the installation at Gastonia Combed Yarn Corporation. The increased carding efficiency came from automatic overhead cleaners. No ceilings were hand-cleaned in this mill during a two-year period. The large direct labor saving came from underframe cleaners installed on 48 spinning frames at the Clara Mill. Investment cost was $28,000.

Cotton and rayon staple yarns: count dispersion tests. E. Lipowsky. *Melliand Textilber. 30*, 47-53 (1949); *in German.*

The importance of uniformity of the fibrous material, card lap and yarn is sketched and the causes of variation in each stage of spinning are examined. It is shown how irregularity over a few inches of lap may result in several hundred yards of bad yarn. Count variation tests are based in large-number sampling and values plotted against frequency. The deviation from the normal count decreases with each stage; this is shown on the diagrams and in tables for cotton and staple rayon. Recommendations are made as to the regulation of machines, training of operatives and mill practice.

Creels. Albert W. Keight & Frederick F. Sutherland (to Camille Dreyfus) Can. P. 470 423, Dec. 26, 1950.

A yarn package support for a creel comprising a platform supportable on a bar of the creel the platform having therein two divergent slots each having a substantially circular opening at the near ends thereof, a yarn package holder mounted in each of the slots for straight-line movement

in the slots and for angular movement in the openings in the slots, the yarn package holder including a plate on top of the platform a second plate below the platform, bolts connecting the plates, a vertical bracket member on one of the plates and a spindle on the bracket member, means in the openings co-operating with the bolts to limit the angular movement of the yarn package holder, and means for holding the yarn package holder in operative position.

Improved random slubbing motion. Anon. *Platts Bulletin 7*, No. 5.

See Front Section.

Ring twisting. Conrad J. Gonsalves (to American Enka Corp.) USP 2 539 950, Jan. 30, 1951.

The process of threading-in a ring twisting machine with a large number of running yarns that comprises continuously delivering a plurality of yarns to one end of the machine, leading the yarns as a group to a point of temporary collection at the other end of the machine, supporting the group above the spindles, breaking an individual yarn from the group, temporarily collecting the running end of the broken yarn at a point below the spindles while establishing a yarn path generally parallel to a spindle to be threaded, threading the spindle and thereafter successively applying the breaking, temporary collecting, yarn path establishing and threading steps to all of the threads of the group.

Saco-Lowell to build worsted system. Alfred D. Cook. *Daily News Record*, Feb. 12, 1951.

Collins & Aikman is licensing the Bird universal-drafting system, and Saco-Lowell will build the system. The patents covering this system (US 2,471,056, 471,057, 2,471,058) give the details of drafting and fiber control.

Key to the system is the use of a small porcupine roller as means of controlling the fibers after they leave the apron. A somewhat larger porcupine has been used on the French worsted system, but not in combination with an apron. Fibers from 1 to 9 inches long can be processed by the Bird system. Worsted, carded woolen, mohair, cotton and all the synthetics have been run on the equipment.

On worsted products, the system starts with worsted top from either French or Noble combs, gives one gilling operation, one or two standard drawing operations, one or two roving processes, and spinning.

Spinning frame regulator. W. E. Baltz. *Melliand*

Textilber. 30, 95-8 (1949); *in German.*

The spinning frame regulator effects 1) a periodic fluctuation of spindle speed, 2) changes in the magnitude of the speed, and 3) adjustment of the height of the spindle. The author describes a new system in which a D. C. motor replaces the 3-phase shunt motor and a fully electric regulator takes the place of mechanical gearing to change speeds. This arrangement allows more production as 5-7% more spindles can be installed in the space of the mechanical regulator. It is easier to install and run, regulation is more efficient and adjustment easier. The efficiency is worked out in detail and the 2 systems are compared. There are circuit and lay-out diagrams.

Spinning frame stop motion helps reduce waste. Staff. *Textile Industries 115,* 193 (Feb. 1951).

See Front Section.

Spinning speeds easily changed with adjustable drive. Staff. *Textile Industries 115,* 109-10 (Feb. 1951).

Production increased, fewer spinning tapes came off, and frames were changed in 50% less time at Crown Cotton Mills on four experimental frames equipped with Vari-spin drives. With the aid of a wrench, a spinning section man can change the drive to any desired speed within the 2.75 to 1 range. Mfr: Reeves.

"Spinn-Taxer" spinning test apparatus: efficiency. Friedrich Murch. *Melliand Textilber. 30,* 3-5 (1949); *in German.*

The "Spin-Taxer," a spinning test apparatus, is described and criticized. Its performance in each state from carding to fine spinning is examined and compared with actual practice. The range of the "Spinn-Taxer" is too limited; it can only spin yarn of one count and twist. The conditions under which the test is carried out are not representative in those mills. The equipment is of some use, however, for rapid tests of dyeing-quality in the spinning of colored yarns. Some mills have spinning test machines of their own, but all these methods suffer from similar disadvantages. The author advises that tests should be made on machines in the mill under normal working conditions and enumerates the advantages of such tests.

Tamper-proof slub catcher for worsted yarn. Anon. *Textile Recorder 68,* 107 (Feb. 1951).

See Front Section.

Tensile strength of cordage. A. S. Roy. *Indian*

Tex. J. 61, 33, 43 (Oct. 1950).

Discusses factors which influence the tensile strength of cordage and cites some of the constructional characteristics of rope.

The spinning of mixed yarns with rayon-staple fiber on cotton-spinning machines. F. H. A. Klompe. *Enka Breda Rayon Revue 4,* 138-42 (1950); *in Dutch.*

Mixing experiments with rayon-staple fiber on cotton-spinning machines give information on the most intensive method of mixing. The homogeneity of a mixed yarn, the mixing of fibers for blends, the advantage of mixing rayon-staple fibers with various fiber deniers, the mixing of bright and dull rayon-staple fiber and the mixing of rayon-staple fiber with fibers of quite different properties are discussed.

Weight saddles for textile rollers. Anon. *Textile Mfr. 77,* 52 (Jan. 1951).

New weight saddles for rollers are made so that weight can be taken off the top front rollers without taking it off the other rollers, according to British Patent 641,361 assigned to Dobson and Barlow Ltd. Only a slight effort is needed to raise the front end of the lever which, when fully raised, remains lifted so that the operator has both hands free to attend to the rollers.

Wet spinning of short staple fibers. Anon. *Textile Mfr. 77,* 50-1 (Jan. 1951).

Increased strength and improved appearance are objectives of a new spinning device that wet spins yarn from short staple fiber, according to British Patent 640,909 which is assigned to Mount Vernon-Woodberry Mills. A tank underneath the rollers contains the liquid, from which a series of discs pick up moisture and transfer it to the bosses of the top rolls.

Yarn defects in knitted fabrics. Anon. *Fibre & Fabric 104,* 13-14 (Jan. 13, 1951).

See Front Section.

Yarn handling unit for spooler reduces operating costs. Staff. *Textile Industries 115,* 117-18 (Feb. 1951).

See Front Section.

Yarn tensioning devices. Edward J. Heizer (to Specialties Development Corp.) Can. P. 470 581, Jan. 2, 1951.

A device for tensioning yarn comprising a stem, a fixed cam on the stem, a housing member rotatably mounted on the stem provided with axially extending aperture means having one end ad-

jacent the cam, a member axially movable on the stem and adjacent the other end of the aperture means, cam follower means movably mounted in the aperture means and operatively connecting the cam and the axially movable member, a spring for rotatably urging the housing member in one direction, an arm responsive to the yarn tension on the housing member for moving the same in opposition to the spring, and yarn tensioning means including a pair of members on the stem one of which is axially movable thereon and is engaged by the axially movable member to effect movement thereof.

Winding and spooling B 5

Spool. Paul M. Mueller (to Hubbard Spool Co.) USP 2 538 584, Jan. 16, 1951.

A spool for the purpose described comprising a tubular barrel element having end walls enxtending in radial planes, annular hub frames having outer walls fitting into the ends of the barrel element and having inner walls projecting a distance beyond the ends of the barrel element, reinforcing walls outside of the end walls spaced away therefrom and having portions thereof deflected inwardly and being slotted, the outer ends of the outer walls of the hub frames abutting the reinforcing walls and projecting through the slots and the projecting portions being secured to the outer sides of the reinforcing walls, the outer portions of the reinforcing walls inclining inwardly to the peripheral portions of the end walls and being secured thereto, the reinforcing walls having openings in register with the aligned passageways of the hub frames, and an arbor tube extending through the aligned openings and the openings in the reinforcing walls and being deflected at its ends backwardly against the reinforcing walls.

A new high-speed vertical spindle winder. Anon. *Textile Recorder 68,* 112 (Feb. 1951).

A feature of a new vertical spindle winder is a reversing traverse which is said to offer smooth and perfectly balanced performance. One half of the traverse and thread guides rise as the other half descends. Shock effects at the reversing points of the traverse are eliminated by special means of spring-cushioning the cam in both directions.

A wide range of speeds are offered, and the doffing and loading of the spindles have the simplicity of uptwister practice. Spindles are mounted in an unusual way: they set against the inner side of the driving belt and their movement to

and from the driving position is effected by a small thumb control device. Supply packages may be wound including rayon cakes, bobbins, or skeins.

High speed winding seen as possible cotton yarn cleaner. Buck Gunter. *Daily News Record.* (Feb. 12, 1951).

See Front Section.

Mandrel support for winder. Earl G. Hill (to Textile Appliance Corp.) USP 2 489 134, Nov. 22, 1950.

This invention relates to machines for winding packages of yarn, thread, etc., and is concerned more particularly with novel means for use in a winding machine for supporting the mandrels for the tubes or cores, upon which the yarn is wound. The new mandrel supports are of simple, inexpensive construction, and the mandrels may be easily inserted in and removed from the supports. Also the supports occupy little space in a direction lengthwise of the mandrel supported thereby, so that, when the supports are employed in a machine having a plurality of winding units in a line, the units may be placed closer together than would be possible if certain prior supports were used.

The new mandrel support is intended primarily for use in winding machines of the type, in which the mandrel is rotated by a rotary member, such as a driven cork roll, in constant contact with the surface of the yarn package being produced. An example of such a machine being that disclosed in Patent No. 2,475,895, issued July 12, 1949 of which this application is a division. The supports are mounted at opposite ends of each cork roll and each support includes a standard having a slot in one side face. The slot extends transversely to the axis of the cork roll and downdardly therefrom at a low angle. The bottom of the slot and its upper end are closed and, at the lower end of the slot, there is an entrance opening into the slot through the top wall thereof. The support may be made by a casting operation and the supports, which are to lie between a pair of winding units in a multiple unit machine may be combined into one, such a compound support having slots lying back to back with their openings facing in opposite directions. (See also USP 2 475 895, *TTD 6,* 754.)

Modern Cone winding Anon. *Textile Recorder 68,* 108 (January, 1951).

The introduction of nylon and the increasing use of fine rayon yarns have made outstanding yarn

preparation a factor of major importance in mill management. In cone winding, the Foster Model-102 was said to produce correct taper which permitted clearance or slubbing of yarn without drag on the surface. This method of drum winding also gave products that were free from "ribbon wind". Correct angle of wind and lay of yarn were other advances made possible by the Foster cone winder. A new bottle winder based on the well-known Britoba pirn winder made its appearance at the Leicester show.

Winding, equipment. Courtaulds Ltd. Brit. P. 626 587, July 18, 1949.

Coning machinery (for rewinding yarn from cake onto cone) in which speed of rotation of positively driven spindle is controlled directly by the growth of the cone.

FABRIC PRODUCTION C

Yarn preparation C 1

Cotton yarn sizing materials, preparation and practices. W. E. Shinn, C. Boyce Sink & Mary E. Parker. *Textile Bull. 77*, 81-2, 84 (Jan. 1951).

A survey of the literature on cotton yarn sizing materials, preparation, and practice. Twenty-seven references include a high percentage of magazine articles. Brief extracts from the literature are reprinted on the following topics: potato and corn starch, tapioca, locust bean gum, thin-boiling starch, algin-protein as a sizing composition, metallic chlorides, tendering effect by salts, deliquescent effects, and permanent sizings.

Section or warper beam. Wm. McCaskie. USP 2 538 697, Jan. 16, 1951.

A section beam comprising a barrel formed of a plurality of staves, a head at each end of the barrel, each head having a recess in its inner surface and the end of the barrel extending into the recess, the walls of the recess closely fitting the surface of the barrel, an axial shaft extending through the barrel and heads, a plate on the outer surface of each head through which the shaft extends, threads and the plates to hold the heads in position, and a hub in the barrel extending radially from the shaft to the inner surface of the barrel, means to secure the hub to the barrel, a collar spacing the hub from the head and engaging both and means to hold the collar on the shaft, a spider engaging the inner surface of the hub and bound to the shaft and bolts extending through the spider, hub, head and plate to bind the whole together.

Size of copper rolls on slasher. Staff. *Textile Industries 115*, 197, 199 (Feb. 1951).

In answer to a question on the size of copper rollers on the slasher from a reader whose front roll is 1/16 of an inch smaller in diameter than the back or finishing roll; one contributor states that the front roll should be slightly smaller, about 1/64" or 1/32, but that rolls of equal diameter should operate all right, too. Another contributor believes that the diameters should be the same as no advantage is gained in eliminating stretch or improving the dressing by using a smaller diameter finishing roll.

Slasher roll rust preventive. Staff. *Textile Industries 115*, 191 (Feb. 1951).

A contributor's method of rust prevention on iron slasher squeeze rolls consists in slipping the rolls into a brass or copper pipe, ⅛ inch or ¼ inch thick and of the same diameter as the squeeze roll. Each end is brazed, and then turned on the are turned down. The roll is then turned on the lathe to eliminate any eccentricity. If the squeeze roll blankets slip, a piece of burlap is placed next to the roll and a piece inserted between each blanket on the roll.

Starch handling at Pineville. Staff. *Textile Industries 115*, 179, 181, 221 (Feb. 1951).

By adapting several pieces of food processing equipment to starch handling, a modern system which saves time and labor has resulted at the Pineville plant of Cone Mills Corp. The system manufactured by the Champion Machinery Co., consists of a series of bucket and screw conveyors which lifts the starch from the basement to a temporary storage hopper in the size room and delivers starch from the temporary storage hopper to an automatic weighting device and then to the cooking kettles. The starch is not handled manually anywhere along the line. Water for the cooking kettles is metered automatically by a meter manufactured by Neptune Meter Co. A size control system, manufactured by Brown Instruments Division, Minneapolis-Honeywell Regulator Co., controls the time and temperature of the size kettles, storage tank, and the cooking cycle. The cooking kettles and storage tank are jacketed on the outside with carbon steel, lined with stainless steel, and insulated with rock wool. Pumps are used to transfer size from the cooking kettles to storage tank and to circulate size from the storage tank to the slashers.

Yarn heating cabinet. Fred F. Bahnson. USP 2 538 349, Jan. 16, 1951.

A cabinet for receiving yarn carriers filled with bobbins comprising a substantially rectangular casing divided into a main section and a cover section substantially from two opposed corners, means for mounting the main section at its lowermost corner so that its lowermost corner and uppermost corner will be substantially in the same vertical plane, the rear upper portion of the main portion having a swingable door and through which yarn carriers can be inserted to rest on the bottom of the cabinet, the cover portion being hindedly connected to the main portion at one side thereof and having means for supporting a second yarn, carrier on the forwardly sloping top of the cover, and heating means disposed within the main section for heating the interior of the cabinet.

Weaving C 2

A new small dwell motion for jacquards. Anon. *Textile Recorder 68,* 111 (Jan. 1951).

New device for imparting a dwell or pause to jacquard harness during passage of the shuttle through the warp shed and which can be incorporated in the maker's latest type chain drive, offers many advantages and is suitable for use with all ordinary jacquards.

Check strap features divided wear between top and bottom edges. Staff. *Textile Industries 115,* 205-6 (Feb. 1951).

Smooth, accurate boxing of the shuttle, long strap life, and freedom from frequent adjustments are reported from use of the Zephyr check strap. The strap is made straight for ½ its length while the other half is curved to such a degree that the resulting angle, when the strap is looped around the picker stick, is greater than the angle of the stick when approaching the end of its stroke. On the power stroke the bottom or curved edge of the strap is presented to the picker stick, and on the check stroke the straight edge is presented. Mfr: Zephr Check Strap Corp.

Corduroy suitings: structure. Anton Frey. *Melliand Textilber. 30,* 188-90 (1949); *in German*

The corduroy weave shows rounded crests alternately with narrow grooves and produces a strong cloth. The upper layers can be woven more densely because some threads float at the back of the cloth. A number of weaves are described and illustrated, among them some cross-ribbed

suitings.

Defective rayon fabrics: causes. Karl Dietz. *Melliand Textilber 30,* 99 (1949); *in German.*

The author describes 5 unusual types of damage to rayon fabrics and traces their causes to defects in machinery and bad workmanship.

Device for tightening the weft in circular looms. Victor M. J. Ancet (to Regina S. A.) USP 2 539 984, Jan. 30, 1951.

In the circular loom, a weft beat-up device comprising a sprocket wheel mounted on the warp thread side of the fell of the fabric to bear against the warp threads near the fell, the teeth of the wheel passing between the warp threads and engaging the weft thread, means being provided for mounting the wheel in a position in which the line of engagement thereof with the sheet of warp threads is curved lie having a point of tangency with the fell.

Gripper loom. Wilfrid H. Edwards. USP 2 538 674, Jan. 16, 1951.

In a weaving loom wherein a shedding means has a plurality of warps running therethrough a take-up means is provided for the woven material, a weft laying mechanism comprising a weft carrying arm, driven means for rotatably moving the arm transversely through sheds formed by the shedding means and means for holding the arm at a predetermined angle with respect to the warps during rotation thereof, whereby the weft is carried by a rotary movement transversely across the warp into position in the woven product.

Lay bar and shuttle guide. Peter Rusnov (to The Warner & Swasey Co.) USP 2 538 630, Jan. 16, 1951.

In a loom for weaving, a lay assembly, a plurality of spaced shuttle guides, means for detachably mounting the guides on the lay assembly, the mounting means comprising longitudinally extending clamp means, the clamp means comprising longitudinally extending clamp means, the clamp means comprising an elongated, generally U-shaped member, the legs of the member being formed with longitudinally-spaced slots perpendicular to the member for locating the guide plates in spaced relation along the lay assembly, and holes in the base of the member between the slots for the reception of fasteners, and fasteners in the holes connected to the lay assembly for detachably mounting the member and guides.

Loom shedding motion: adjustment. E. Hesse. *Melliand Textilber. 30,* 12-14 (1949); *in German.*

The importance of the shed is explained and the relative advantages of advanced and retarded shedding are discussed. The latter is recommended for several types of yarns and weaves, particularly for waste yarn fabrics. Advanced shedding is used with plain weaves only; it prevents reed marks. Two diagrams illustrate the influence of the shed angle. Advancing and retarding the shedding conflicts with the fixing of the pick and slay required for best weaving condition, but the requirements of the fabric must always be given first consideration.

Loom shuttle: motion. Hugo Halamicek. *Melliand Textilber. 30,* 34-5 (1949); *in German.*

The timing and speeds of the shuttle motion are analyzed and the causes of speed losses are examined. Diagrams illustrate correct and wrong acceleration and retardation of the shuttle, and show their effect on start and finish of the traverse. A picking tappet is illustrated on which the individual phases of a pick during a revolution are shown.

Metallized sand rolls reduce weave room supply costs. Staff. *Textile Industries 115,* 114-15 (Feb. 1951).

See Front Section.

Method and apparatus for making rugs. Ralph R. Cone. USP 2 482 655, Sept. 20, 1949.

Apparatus for producing flattened helical bodies from filamentary material comprises a rotary head adapted to receive filamentary material, means provided on the head for winding the material helically and positively advancing it. A mandrel, arranged in the path of the helically wound material, has a varying peripheral cross section of constant perimeter for imparting to the helically wound material a flat form. Means are arranged in the path of the helically wound material to fasten it in flat form.

More production, easy maintenance with overhead loom beams. Staff. *Textile Industries 115,* 125 (Feb. 1951).

Loom beams are mounted over the looms in one southeastern mill, with good results from space saving, convenience, and other advantages.

Loom parts are more accessible to the loom fixer for repairs and oiling. Trucks moving up and down the alleys cannot run into the warps. There is less likelihood of oil and grease getting on the warp since weavers, fixers, and cleaning men do not have to lean over the warp to service the loom. Smash men are the only operatives that find this arrangement inconvenient.

Not only is this overhead installation of loom beams an advantage from the maintenance standpoint—it permits the utilization of larger loom beams with an increase in yarn capacity. Formerly 20-inch loom beams were employed on these looms. Now 30-inch beams are used, resulting in approximately 125% more yarn being wound on each beam. This, of course, provides a reduction in the amount of time that looms must stand idle for warp tying and beam handling. Also, there is less sized yarn waste in any given period of time since there are fewer run-outs. Mfr: West Point Foundry & Machine Co. (Extract from *Textile Industries,* February 1951).

Picking mechanism for looms. Clarence R. Kronoff (to Crompton & Knowles Loom Works) USP 2 538 530, Jan. 16, 1951.

In pneumatic picking mechanism for a loom having a supply of compressed air and having a lay and a gang of pneumatic shuttle boxes which shift in a path transverse of the lay and register one at a time with the lay in acitve position, each shuttle box having a shuttle delivery mouth at one end thereof and an aperture at the other end thereof, a primary valve normally out of the path of shifting of the shuttle boxes, a secondary valve normally closing the primary valve to the supply, means projecting the primary valve through the aperture of the active shuttle box and into the latter; and means thereafter moving the secondary valve to open the primary valve to the supply.

Planned color and weave effects in single cloth structure. D. C. Snowden. *British Rayon & Silk Journal 27,* 59-60 (January. 1951).

A series of weaves, with designs showing color uses for weave effects including line effects from two-and-two coloring.

Pointers on fixing the batwing pick motion. J. L. Bove. *Textile Industries 115,* 187-8 (Feb. 1951).

Picking motions will run dry from lack of oil and proper setup of the motion. Details are given of suitable methods for setting up and fixing the picking motion including; setting and aligning the pick cam; the preparation of pick rolls when replacing badly worn ones and the setting of them; preparation of a new pick shoe before

putting into use and the type of set screws to use for pick shoes; preventing damage to the pick shaft stop; and removing the pick shaft from the loom prior to replacement.

Raised twills: weaving with weft changing. W. Wiechmann. *Melliand Textilber. 30,* 55-7 (1949); *in German.*

From standard weft twills a number of striped and diamond weaves are developed. Raised fabrics based on these weaves are suitable for blankets, underwear and caps. There are 24 weaving plans.

Rayon cloth calculations — I. A. T. C. Robinson. *Skinner's Silk & Rayon Rec. 25,* 110, 114, 117 (Jan. 1951).

Practical fabric construction usually is calculated from rule-of-thumb formulas gathered mostly from the designer's first hand experience. In the case of plain fabrics made of rayon, the author proposes that the process of accumulating this experience might be hastened if certain formulas could be established beforehand. The author reviews the work done on such factors of fabric construction as specific gravity of the fiber, compactness of yarn, yarn diameter, and the effect of twist, The formulas for yarn diameter of Law and Ashenhurst are described, and Pierce's substitution of "specific volume" for yarn diameter is briefly outlined.

Rayon Cloth calculations — 2. A. T. C. Robinson. *Skinner's Silk & Rayon Rec. 25,* 245-6, 249, 251, (Feb. 1951).

The formula of Law and Ashenhurst are used to illustrate the calculation of warp and filling spacings infabric construction. Examples include cloth made from 1/16s cotton count warp and filling; square 2/2 twill made from 1/20s cotton; 2/1 twill made from 1/24s spun rayon warp, 1/18s spun rayon filling; and five other fabric constructions made from blended yarns.

Rayon fabric strength depends on "variables". Rene Bouvet. *Textile World 101,* 145, 147, 254, 256 (Feb. 1951).

Dimensional changes in fabrics result in increased fabric strength. Other strength-increasing factors are sizings and finishes and the so-called "packing" factor. The latter is described as follows:

A change in warp count affects the tensile strength of a continuous-filament fabric in direct relation to the number of ends added or taken away. The same rule does not hold true for

spun fabrics. Better spun yarns reflect about 80% of their fiber strength, with the balance being lost either through slippage or twisting damage. Hence, any means for helping check fiber slippage increases yarn strength, provided it does not injure the fiber in some other way. Such means are afforded either by some crimps as introduced by the weave or by an adequate increase in warp sley or in pick density.

If a spun-rayon fabric made with 100 ends should break at 100 lb., its tensile strength might well be raised to 125 lb. upon an increase of sley to 120 ends. In such a case, the five extra-pounds strength must be gained through increased fiber cohesion as a result of a greater packing factor.

The packing factor that raises the coefficient of fiber friction ceases to be beneficial from the moment it is in balance with the inherent fiber strength.

The better fiber cohesion brought about by the packing factor is not merely achieved through a higher warp sley but also with a great number of picks. For all spun-fabric constructions, there is a definite area wherein optimum strength can be achieved.

An experiment has been made in which spun construction made of zero-twist yarns reached a fabric strength equal to or even better than those made of conventional yarns. And so it is beyond doubt that the packing factor plays a very important factor in the strength field.

Receiving and return mechanism for spoolless shuttles in looms for weaving. Erwin Pfarrwaller (to Sulzer Freres) USP 2 538, 798, Jan. 23, 1951.

In a loom for weaving of the type having spoolless shuttles, a shuttle picking mechanism, a shuttle receiving mechanism, a shuttle return conveyor transporting the shuttles from the receiving mechanism to the picking mechanism, the shuttle receiving mechanism comprising shuttle transfer means for transferring the shuttles to the return conveyor, the transfer means including shuttle passage means and shuttle moving means positively moving a plurality of shuttles at the same time through the passage means.

Repair for light weight heddles. Staff. *Textile Industries 115,* 206 (Feb. 1951).

A modified use of the Walker Lock-On Heddle Repair for permanently repairing very light weight heddles having no swedge shoulders is described and illustrated. The same repair head is used as required for repairing conventional

heddles having wedge shoulders, but the cutting and treatment of the broken top loop is different. Mfr: Walker Mfg. Co.

Ribbon quality attained at Century's new weaving mill. John J. Lowe. *Textile World 101,* 130-33 (Feb. 1951).

Air conditioning, excellent plant layout, strip fluorescent lighting, automatic warp tying, and windowless construction are the features of a new ribbon manufacturing plant at Newport News, Va. Plant belongs to Century Ribbon Mills, Inc.

Smoother loom operation obtained with flywheel type motors. Staff. *Textile Industries 115,* 105-6 (Feb. 1951).

Fly-wheel type loom motors have been applied to 90 new 44-inch Draper Model X-2 looms at the Graniteville (S. C.) Company. Picks per minute of these looms average 178. The motors are ¾ hp, 1750-rpm type and drive through a pinion and gear.

Looms equipped with the flywheel type motor definitely have a smoother "feel" than those driven with motors that do not have flywheels; that is, the lay operates more smoothly. When a hand is placed on the lay of an operating flywheel motor driven loom and its motion compared with that of the lay of a loom driven by a non-flywheel motor, there is less variation of speed —the "jerky" feeling is eliminated.

Tests conducted by mill electricians indicate that the flywheel type motor has a better power factor, resulting in savings in the form of reduced power costs. In addition, it was possible to reduce the horsepower rating of the motors fitted with flywheels.

So you want good cloth! Part 20 — Loom stoppage. Frank D. Herring. *Textile Bull. 77,* 88-91 (Jan. 1951).

Often a fixer is called to work on a loom which is stopping off when there is no apparent cause for stoppoge. These faults usually originate from the filling fork or the warp stop motion. A definite procedure is described for correcting such troubles.

Staubli dobbies. W. Middlebrook. *Textile Mfr. 77,* 3-7 (Jan. 1951).

The Staubli is a cam-model chain driven from the top shaft. A so-called "paper" dobby, the device has heddle connections with an extra long serrated jack lever. While not new, the Staubli dobby offers considerable scope for altering the size of shed.

Studies in textile design. VI — Further honeycomb weaves. Norwood. *Textile Recorder 68,* 91-2 (Feb. 1951).

This series of articles is continued with other samples and illustrations of woolen & worsted honeycomb weaves. In the present article, it is pointed out that honeycomb designs are well suited to the display of good color schemes. Designs and sample photographs of three fabrics are given.

Studies in textile design 5. "Norwood". *Textile Recorder 68,* 95-96 (January 1951).

Diamond patterns are produced in a number of ways, but the simplest designs are often worked out with twills running in opposite directions on a certain number of ends and picks in both warp and filling directions. Six examples of various diamond patterns are illustrated, and the methods of producing each are given.

Teamwork gives quality weaving at Burlington Mills plant. W. A. Thomason, Jr. *Textile World 101,* 122-25 (Feb. 1951).

Systems of checking looms and fabrics for quality and of preventative maintenance are methods used by Greensboro weaving plant of Burlington Mills Corporation to maintain a high standard of cloth quality from the weave room. Photographs show the details of loom maintenance, which is done when the warps are out. Mills system of checking first cuts is described. Swatches are dyed and checked for defects prior to the cut inspection. First cuts are inspected by the second hand on a grading machine, and if necessary, the fixer and weaver may be called to inspect the cut.

Textile devices. Robt. H. Roughsedge & Hans G. Lustig (to Camille Dreyfus) Can. P. 468 864, Oct. 17, 1950.

In a textile machine wherein a warp of yarns is fed to operating elements, means for stopping the operation of the machine upon breakage of a warp yarn, the means comprising a light source, including a concentrated arc lamp, for projecting a concentrated bea mof light rays across the entire width of the machine, fixed at one lateral end of the machine and a photoelectric for receiving the light rays fixed at the other lateral end of the machine, and operative means controlled by the photoelectric tube adapted to stop the machine upon the pasing of a broken yarn end through the beam of light rays.

Thick and thin novelty crepe. Anon. *Am. Wool*

Cotton Reptr. 65, 9-10 (Feb. 1, 1951).

A thick and thin novelty crepe fabric of soft, lustrous texture with an irregularity of surface or face is analyzed. It consists of a warp of fine size acetate yarn of high construction and a filling combination of thick-and-thin viscose and hard-twisted viscose yarns to give the fabric a crepe effect. The irregularity of the bunches in the thick-and-thin yarn imparts an all-over mottled or broken appearance. The fabric is woven on an ordinary box loom with the filling inserted with 2 picks each of thick-and-thin and hard-twisted yarn, which, because of their fine denier and diameter are very close together in a woven fabric. Dyeing of the fabric can be done in one color or in a range of two-color combinations.

Tubular fabric loom: setting. Reinhard Bauer. *Melliand Textilber. 30,* 142-44 (1949); *in German.*

One warp beam and one shuttle only are used for tubular goods, but the warp and weft are arranged in alternate upper and lower sheets. The course of the weft through the upper and lower warps is explained. The weft is reversed to connect both layers and must run spirally through them. Correct and wrong weaves are illustrated. The direction of the weft in the upper pick must be fixed and the number of threads is then calculated by a given formula to ensure the changeover of the weft between upper and lower warps. For a given weave, the "basic number" needed for the formula is found from the number of threads necessary for the repeat. The correct procedure of designing the more complicated patterns is described. There are 22 weaving diagrams.

Two-color reversible satin. Anon. *Am. Wool Cotton Reptr. 65,* 11-12 (Jan. 25, 1951).

To produce a reasonable amount of stability and to prevent yarn slippage a high fabric construction either in the warp or filling direction is required for satin woven fabrics, and rayon fabrics usually have a high warp construction rather than filling since it is more economical. Since any irregularity in the length of warp yarn will show up on satin woven cloth, it is important to have the tension at various parts of the warp the same and to keep the number of knots on the yarn as low as possible. A reversible rayon satin with an acetate warp and viscose filling is analyzed. The individual stripes are 3 dents each with 15 ends weaving 4 up and 1 down on

the face and with the following 15 ends weaving 1 up and 4 down on the back. The satin weave on the back has a binding point which joins with the opposite weave on the face to produce a clean, sharp edge to each stripe. All the warp yarn can be placed on the same beam with identical warp tension on all ends. Cross or piece-dyeing of this fabric is recommended as the most economical for attaining two-color effects.

Variable beat-up motion for looms. Anon. *Textile Industries, 115.* 94 (Feb. 1951).

In a variable beat-up motion for looms, the effective throw of the lay is varied so as to vary the overall length of the pitman rods; and an eccentric connection between the pitman rod and the lay varies the stroke of the lay in regular cycles so as to beat up 2 fillings in close proximity to each other, at the same time the warp threads are spaced apart from each other. (Pat. No. 2,514,603 Marcus D. Haney).

Warp letoff mechanism. George E. Clentimack, (to Draper Corp.) USP 2 539 296, Jan. 23, 1951.

In a textile machine, a warp beam and means to drive the warp beam which comprises an electrically energized power means having a capacity substantially greater than that required to drive the beam during normal operation of the machine and an electrically energized retarding means coupled to the power means for opposing the driving force thereof, a circuit for supplying current from a source to the power means and retarding means, and a controlling means in the circuit for varying the current to each of the means to control the rotation of the beam in accordance with the tension in the warp threads drawn from the beam.

Warp letoff mechanism. George E. Clentimack (to Draper Corp.) USP 2 539 295, Jan. 23, 1951.

In a textile fabric producing machine: fabric forming instrumentalities; a warp beam from which a tensioned warp sheet extends to the instrumentalities; means including an electric motor arranged to rotate the beam at a rate dependent upon the voltage applied to a motor winding; means acting on the warp sheet and tending to reduce cyclical variations in the tension of the sheet to limit the tension to values within prescribed limits and including apparatus movable to an abnormal position upon the tension reaching a value outside the limits; a variable voltage transformer supplying energy to the

winding; and means governed by the apparatus upon abnormal movement thereof and acting to regulate the variable voltage transformer to vary the voltage applied to the winding to change the rate of rotation of the beam to restore the tension to a value within the limits.

Wool industries' drawing-in machine now employed for cotton warp drawing. Anon. *Textile Recorder 68,* 110 (Feb. 1951).

See Front Section.

You can trace worsted barre marks. W. J. Woolstan. *Textile World, 101,* 134-35 (Feb. 1951).

See Front Section.

Knitting C 3

A new German fashioned hose machine. Anon. *Skinner's Silk & Rayon Rec. 25,* 91 (Jan. 1951).

The new Schoneman full fashioned hosiery machine incorporates a fully automatic welt turning attachment and runs at over 90 courses per minute. It is also fitted with a picot device. Delivery of small quantities of this machine are expected to start within a few months. Production of the machine is organized in series, e.g. the present series is for thirty machines, three section 51 gauge. The next series will be for thirty machines, four section 51 gauge; other series including 45, 54, 60 and 66 gauge.

The machine has six thread carriers, two narrowing slides with large tackles, take-down rollers with automatic take-off weights, a run-back safety device and a safety clutch on the driving gear. There is a variable speed individual motor drive.

Automatic interlock machine knits wide variety of fabrics. Anon. *Am. Wool Cotton Reptr. 65,* 15, 59 (Jan. 25, 1951).

A new automatic interlock machine, introduced by Scott & Williams, Inc., can produce a wide variety of fabrics in plain interlock, horizontal welt, jacquard stripes, and many tuck stitch formations. The automatic feature of the machine, which allows it to change from one variety of knitting to another is a matter of minutes, consists of 2 rings mounted in the cap with swivel cams connected to the rings by levers and links. This permits positioning of the swivel cam in 4 different positions eliminating time-consuming switching.

Basis of pattern in warp knitted fabrics. C. H. Edwards *Textile Recorder 68,* 88-90 (Jan. 1951).

In the third of the current series of articles, four-bar fabrics are described as generally of coarser quality and usually for outerwear purposes. Heavier yarns are used than for one, two, or three bar fabrics. In most of the four-bar fabrics, the fabric face is the lapping side; and the arangement of laps rather than stitch formation is the main purpose of the designer. Photographs of five fabrics are accompanied by details of how the patterns are achieved.

Circular knitting machines: pattern repeat calculations. Arthur Aurich. *Melliand Textilber. 30,* 14-15, 191-92 (1949); *in German.*

1) The relationship between the numbers of needles and hooks is resolved to give the width of knitting pattern. The height is found by dividing the number of hooks per wheel by the width. The repeat is then obtained by a simple formula which also expresses its direction. For more than one wheel the width remains unchanged and height and repeat increase proportionally. Plain pattern wheels, however, do not multiply the repeat calculated for a single wheel. 2) The pattern is drawn on special squared paper and lines are numbered according to the repeat. To transfer the pattern to the machine, it has to be read in a certain order and sinkers are chosen and inserted by marked and empty squares. The setting of the wheels is described in detail and shown with a worked example.

Crooked seams on F-F hosiery. Staff. *Textile Industries 115,* 199-200 (Feb. 1951).

Crooked seams on full fashioned hosiery are primarily caused by stockings running one-sided on the machine, brought about by the stocking knitting tight on one side and loose on the other. Proper adjustment of the tension on the knitting yarn with needle bars started evenly on each side when a new set is started will remedy this situation. Jack heads and sinker heads must also be even. Careful seaming is also important in avoiding crooked seams.

Flat frame knitted selvedge template. Wilhelm Busch. *Melliand Textilber. 30,* 102 (1949); *in German.*

A comb-like template is described that makes possible the knitting of a 2/2 selvedge on an ordinary knitting machine.

Hosiery, drying, equipment. W. M. Cissell. Brit. P. 624 833, June 16, 1949.

Drying machine for hose, half-hose, etc., comprising hollow forms arranged concentrically round rotatable hollow support through which hot air is blown: forms may be moved individually out of path of hot air without affecting the stream of hot air to other forms.

Knitting machine, drive Hemphill Co. Brit. P. 624 864, June 17, 1949.

Mechanism for operating clutch drum and pattern drum of a knitting machine, in which drums are mounted independently for step by step rotation.

Knitting machine (fully-fashioned), stop-motion. I. L. Berridge & Co., Ltd. Brit. P. 623 376, May 17, 1949.

Stop-motion for Cottons Patent machine, including means timed and operated by the main cam shaft for preventing the needles from pressing while the machine is still running.

Knitted machine (fully-fashioned), design. Wm. Cotton, Ltd. Brit. P. 627 244, Aug. 4, 1949.

Mechanism for driving the carriers of Cottons Patent and other straight bar knitting machines.

Knitting machine guard. Laurence E. Hunold. USP 2 539 137, Jan. 23, 1951.

A device of the character described to be used in combination with a knitting machine having a cam member revolving around a stationary needle guide, the device consisting of a body forming an enclosure open at its lower end of the closed at its upper end, the lower end of the body engaging the revolving cam member, the upper end, the aperture providing a means of admitting yarn into the enclosure for contact with the needles of the machine during its revolving action.

Knitting machine with selector wheel nullifying cams. Lester Mischon & Harry Agulnek (to Supreme Knitting Machine Co., Inc.) USP 2 539 790, Jan. 30, 1951.

In a circular knitting machine having a needle cylinder with vertically movable needles, a selector wheel in operative engagement with the butts of adjacent needles on the cylinder for operatively raising selected needles and permitting others to pass therethrough unelevated, whereby the needles leave the wheel at predetermined upper and lower levels, and a stitch cam for depressing a cast-off level needles that had passed through the wheel, a cam assembly having a body portion, a nullifying cam between

the selector wheel and stitch cam movably associated with the body portion and movable between retracted and projected limiting positions, the nullifying cam having a needle depressing surface engaging the needles at the upper level when the nullifying cam is in its projected position and being out of engagement therwith when in its retracted position, the needle depressing surface being out of engagement with the needles at the lower level when the nullifying cam is in both of its limiting positions, whereby the needles unelevated by the wheel will be permitted to follow their non-knitting course and needles selectively elevated by the selector wheel may be diverted from their knitting course.

Lint remover for knitting machines. Wm. S. Sharp (½ to Harold E. Sharp) USP 2 538 659, Jan. 16, 1951.

In a structure as described, a circular tubular manifold adapted to be mounted at the upper end of a circular knitting machine, a plurality of tubular outlets connected with the manifold spaced from each other around the manifold, each outlet tube being arranged to extend to a knitting station of a circular knitting machine back of the thread guide therein, a tubular inlet connected with the manifold adapted to extend downwardly to the lower portion of the frame of a circular knitting machine, a valve housing connected to the lower end of the inlet tube, means for supplying compressed air to the valve housing, a movable stem extending below the valve housing, upward movement of which opens a passage for compressed air through the tubular inlet to the manifold and thence out through the outlet tubes, and a lever pivotally mounted at one end carried by the valve housing and extending underneath the stem, upper movement of the underneath the stem, upper movement of the lever opening passage in the valve housing for flow of compressed air.

Links-and-links machines. Charles F. Miller (to Jacquard Knitting Machine Co.) Can. P. 470 532, Jan. 2, 1951.

In a knitting machine, two coaxial needle cylinders having a fabric space between them, a plurality of slidable double-ended needles transferable from one cylinder to the other, needle jacks in each of the beds, the jacks having outwardly projecting butts at their mid-portions and at their tail portions and being recessed at the backs of their tail portions to permit the jacks to be rocked to release their needles, members encircling the cylinders close to the

jacks therein to confine the jacks in the cylinders and providing races for the mid-portion butts of the two sets of the jacks, the race for each set including a portion retracting the repective jacks to a cast-off position, a portion projecting the jacks at least toward clearing position, a portion holding the jacks in projected positions and a portion paralleling the last mentioned portion projecting the respective jacks to and retracting jacks from needle-transferring positions, cams to direct jacks to one or the other of the last mentioned two race portions at will and a cam for the tail butts of each of the two sets of jacks and a fixed distance from the fabric space, the cams occupying substantially the same angular positions as at least a part of the last mentioned jack-retracting portions of the races and engaging the tail butts when the jacks are at the jack-retracting race portions, the portion of the encircling and race-providing members adjacent the head portions of each of the two sets of jacks being recessed to receive the heads of rocked jacks at substantially the same angular position as the respectively adjacent tail-butt cam.

Manufacture of jacquard knitwear. J. B. Lancashire. *Textile Recorder, 68,* 99-101 (January, 1951).

In this second of a series of articles, the author describes figure designing on one set of needles. The pattern wheel is one of the simplest selecting devices applied to circular machines. The wheel works in a plane at an angle of 20 to 30 degrees to the horizontal, and is driven either by the butts of the needles or by toothed gearing. The operation of the pattern wheel, or outer edge of the patterning device, is detailed, and the ratio of needles in the cylinder and tricks in the pattern wheel and their effect upon patterning is explained. Non-spiral patterning, spiral patterning, three-level needle selection, and cam systems are discussed briefly.

The manufacture of jacquard knitwear. III — B. Lancashire. *Textile Recorder 68,* 101-3 (Feb. 1951).

Two recent circular rib machines used for the manufacture of jacquard fabrics are the Berridge Model 99D and the Mellor Bromley RLG. These are 30-inch machines of 12, 14, or 16 cylinder and dial needles per inch. Each has 12 feeders and a multi-step needle-selecting mechanism to facilitate the manufacture of an endless variety of figure designs.

The details of the patterning mechanism are explained, including the needle-selecting mechanism, the battery of elliptical cams, etc. Pattern building, the possibility of geometrical patterning, and the reproduction of rib jacquard designs are described.

Measuring table aid speeds hosiery matching operation. Staff. *Textile Industries 115,* 183 (Feb. 1951).

A simple "comparator" chart, painted in bright colors on a white table greatly facilitates the assorting of full-fashioned hosiery at MKM Knitting Mills. The measuring device permits clearly visible length readings and provides means for separating stockings into short, medium, and long classifications. The chart is considered an improvement upon the yardstick since it accelerates length sorting and reduces the incident of error.

New winder for hosiery bobbins. Anon. *Textile Recorder 68,* 111 (Feb. 1951).

A new single-spindle winder has been introduced by Muschamp Taylor Ltd. to wind small bottle bobbins for hosiery use, thus obviating the need for a full-scale winder for those hosiery manufacturers whose production of half hose is not sufficiently large to justify the purchase of a fully-automatic hosiery bobbin winder. The new winder is self-contained with motor and base, and small enough to set on table or other suitable foundation. The spindle is driven by a one-sixth horsepowr motor. A simple creel will take any type of yarn package, and the unit may be carried about to any part of the mill for special operation, or portable uses.

Nylon, heat setting. Wolsey, Ltd. Brit. P. 631 456, Nov. 3, 1949.

Process for heat setting of nylon in which yarn is wetted before knitting, and subjected to hot air treatmnt at point near needles directly after knitting, to set the yarn in the form in which it is shaped on the needles.

Nylon, preboarding. E. B. Bates. Brit. P. 631 448, Nov. 3, 1949.

Preboarding of nylon stockings, etc., by drawing onto electrically heated form and subjecting to humid atmosphere at temperature of 230-260°F.

Nylon, preboarding. Brit. Schuster Co., Ltd. Brit. P. 628 286, Aug. 25, 1949.

Method for preboarding nylon hosiery, in which

hot air is circulated through pre-boarding chamber and moisture is supplied other than by live steam. Liquor may be sprayed onto stockings either before or after entering preboarding chamber: or stockings on forms may be passed between pair of rollers down the nip of which a stream of liquid flows; or moisture may be supplied by vapor rising from trough either within or outside the preboarding chamber. Hot air and moisture are circulated in closed circuit, and dgree of humidity in preboarding chamber is controllable.

Nylon, preboarding, equipment. Proctor and Schwartz Inc. Brit. P. 625 480, June 28, 1949.

Nylon preboarding machine of type in which forms may be pivoted outward in vertical planes radiating from common vertical axis, and pivoted inward to nested position for enclosure by movable dome forming preboarding chamber; movement of stocking forms to nested position is controlled in order to prevent damage due to accidental rubbing of adjacent forms.

Stocking and method of making the same. Norman S. Illges & Joseph E. Stoltz (to Shannon Hosiery Mills, Inc.) USP 2 539 582, Jan. 30, 1951.

In a stocking of the full fashioned type which is produced by a continuous knitting operation, an improved heel construction comprising, an area in which the selvage and a plurality of wales adjacent thereto are transferred outwardly in each of a plurality of successive courses a disance equal to the spacing between adjacent wales, a subsequently knit area in which the wales are also transferred outwardly a distance of one wale with the innermost wale of the transferred group in each succeeding course remaining untransferred and the selvage and a relatively few wales adjacent thereto remaining untransferred and parallel to the wales in the body portion of the fabric, whereby a line of joinder is formed between the transferred wales and the untransferred wales adjacent to the selvage, and a succeeding area in which narrowing takes place, the line of narrowing in the last mentioned area positioned inwardly from the selvage and moving inwardly a distance of one wale in each succeeding course and the selvage moving inwardly a distance of two wales in each succeeding course.

Warp knitting machines. Robt. Peel & John L. Morrison (to F. N. F. Ltd.) Can. P. 469 062, Oct. 31, 1950.

A warp knitting machine provided with hook needles and independent tongues arranged to slide to and fro in the needles and with sinkers that are caused to undergo to and fro motion in one part of the machine cycle and to stay comparatively stationary during the remaining part of the cycle by eccentrics arranged to rotate at different speeds and connected in parallel to the sinkers.

Warp knitting machine, design. F. Lambach. Brit. P. 622 483, Mar. 5, 1949.

Single bar latch needle warp with improved sinkers and weft insertion.

Warp knitting machine, dehign. S. G. Dehn. Brit. P. 622 65 May 5, 1949.

Improvements in construction of tricot warp loom to give increased speeds. Improved thread guides, sinker nib, needle and tongue mountings and opening means.

Warp knitting machine, design. T. Haines & Co., Ltd. Brit. P. 623 372, May 17, 1949.

Attachment for existing warp knitting machines to allow automatic positioning of heel, foot and toe reinforcements.

Warp knitting technology. 11. D. F. Paling. *British Rayon & Silk Journal 27,* 55-57 (January, 1951).

The differences between a single plain presser and a "cut" presser are described in detail. The latter is normally provided on weft knitting machines for the production of tuck stitch fabrics. On warp knitting, the function of the cut presser is such that certain needles are allowed to miss-knit for a certain number of courses, and the effect on the fabric is therefore developed on a held-stitch basis and is not dependent on the accumulation of loops or tuck stitches. Other mechanisms needed for cut-presser fabric production are outlined. Fabrics made from the technique are classified into two main groups: shell stitch fabrics requiring one guide bar and a cut presser; spot or knop effects which require two or three guide bars.

Yarn feeding device. Eugene St. Pierre (to Hemphill Co.) USP 2 539 527, Jan. 30, 1951.

A yarn feeding device for a circular, independent needle, knitting machine having needles which comprises driven means for drawing yarn from a source by the friction of the means upon yarn in contact with it and other means for varying the frictional relation between the means and the yarn during knitting by varying the length of

yarn in contact with the means, the other means consisting of at least one take-up engageable with the yarn and responsive through its own resiliency to variations in yarn consumption by the needles, one end of the take-up being adjustably fixed.

Yarn, tensioning, equipment. R. Dewas. Brit. P. 627 567, Ang. 11, 1949.

Yarn tensioning apparatus designed to maintain even tension when yarn is of irregular thickness and to reduce "fly" clogging: comprises disc tension devices of construction modified from normal.

Special fabrics C 4

Permanently stiffened multi-layer fabrics. Anon. *Skinner's Silk & Rayon Rec. 25,* 108 (Jan. 1951).

B. P. 646,200 refers to the manufacture of multi-layer fabrics such as those marketed under the trade name of "Trubenised" and which very satisfactorily fulfill the need for fabrics having a flexible porous stiffness which is fast to repeated washings and laundering. Such fabrics are made by sandwiching between a pair of inert fabrics an inner or intermediate ply or fabric in which there is a suitable distribution of acetate rayon threads, then applying a liquid containing ingredients capable of softening or rendering tacky the acetate rayon threads so that on subjecting the composite fabric to heat and pressure, the outer fabrics become firmly bonded to the intermediate ply.

STANDARD FINISHING D

A new model of the Ferranti Guider. Anon. *Skinner's Silk & Rayon Rec. 25,* 36, 38 (Jan. 1951).

The first Ferranti cloth guider was put into service as long ago as 1946, and has undergone many improvements since then. The guiding method is basically different from any other method of guiding cloth. A unit, consisting of a guide arm, the position of which is controlled by a servo-motor, is mounted on the tenter in such a way that the guide-arm-pivot is vertically beneath the pivot. A conical whee (7-in. diameter) is mounted on the guide arm so that the rear edge of the wheel is vertically beneath the pivot.

Cloth held on the wheel by a strip of card cloth, will leave the wheel at its rear edge, which is a fixed point. Provided that the wheel and arm

are pointing along the line of approach of the cloth, the selvedge will be placed on the pins.

The electronic servo-mechanism keeps the guide arm and wheel correctly positioned, which it does without touching the selvedge. A photo cell and lamp (in a small housing) are mounted on the end of the guide arm. It is so arranged that the selvedge cuts off half the light falling on the cell. In this position there is zero output from the amplifier to the servo-motor, and the arm remains stationary. When the cloth moves one way or the other, the amount of light falling on the photo-cell is varied. The electrical output varies with this proportion, and it is this amount, amplified, that causes the motor to rotate the guide arm, until the "eye" is once again in its half-way position over the selvedge.

Cellulose-glycollic acid: application in detergents. Julius Voss. *Melliand Textilber. 30,* 197-99 (1949); *in German.*

German Patent Specification No. 719 167 states that the cooperation of a non-detergent wetting agent (alkylnaphthalenesulfonic acid) and the non-detergent celluloseglycollic acid in an alkali solution produces a detergent ("Hexawa"). Experiments with washing powders, however, have shown that alkylnaphthalenesulfonic acid does not increase the detergent action of soda and that celluloseglycollic acid increases it only slightly. Only by mixing soda, sodium silicate and celluloseglycollic acid will the detergent action be increased considerably. The action of this and related detergents is explained and further tests are described. Softening agents were introduced to reduce "greying" and lime deposits, but this does not increase the cleaning properties. The addition of Igepon and Mersolate gave a better result.

Closed bleaching and dyeing vats: steam economy. Martin Fichtner. *Melliand Textilber. 30,* 115-16 (1949); *in German.*

A test was carried out with an open and a closed vat to determine the saving of steam and heat. The quantities are worked out to show comparative efficiency and the machine diagrams are reproduced. The over-all saving of steam is 59.6%, and that of time 8.5%. Comparative figures for all stages show the great advantages of closed vats. There are notes on the shuttering of vats.

Cloth guides. Anon. *J. Soc. of Dyers & Cols. 66,* 649 (Dec. 1950).

Apparatus is described whose efficient operation is unaffected by variation in the width of the

cloth being guided and which can be adjusted to avoid unnecessary actuation of the guiding when the selvedge is slightly irregular without sensibly affecting the accuracy of guiding.

Comparative study of lye boiling. U. N. Mukerjee. *Indian Tex. J. 61,* 116-17 (Nov. 1950).

Discusses the merits of lime and soda scouring. Cites the disadvantages of lime boiling which include tendering of fabric and greater labor and full costs.

Cotton duck and finishes. George J. Huebschman, Jr. *Nat'l Canvas Goods Mfrs. Review 26,* 20 (Feb. 1951).

See Front Section.

Drying (electronic), process. Radio Corp. of Am. Brit. P. 624 092, May 27, 1949.

Process for expelling moisture from dielectric materials, e. g. rayon packages, by high frequency heating. Heating effectiveness of field varies from low rate near inlet to high rate near outlet, as determined by change in moisture content, and therefore in power factors of articles passing through the apparatus.

Drying, equipment. Hunt & Moscrop Ltd. Brit. P. 633 292, Dec. 12, 1949.

Apparatus for continuous drying of fabric in open width form. Common fan scroll is employed for each pair of fans serving material passing through upper and lower compartments respectively, the scroll also serving as a partition between the 2 air streams.

Drying yarn. Pieter van Dijk (to American Enka Corp.) USP 2 539 978, Jan. 30, 1951.

In the drying of synthetic thread by the method which involves delivering thread to a drying zone at a constant rate of speed and drawing the thread substantially horizontally through the zone while it is suspended from points outside of the zone to hang with sag in the zone, the improvement which comprises effecting the drawing of the thread with a frusto conical draw-off roller and controlling the position of the thread axially of the roller as a function of the magnitude of the sag.

Enzyme de-sizing agents. Julius Voss. *Melliand Textilber. 30,* 246-47 (1949).

A brief account is given of the various types of enzymatic desizing agents, their sources and optimum conditions.

Enzyme desizing of textiles. Charles L. Kloss. *Rayon & Synthetic Textiles 32,* 81, 82, 92 (January 1951).

Where materials are to be dyed or printed and finished, the sizing on the yarn is normally removed by the enzyme method. Tripsin is the most common type of enzyme. The function of an enzyme is to convert the starch or gelatine to soluble materials which are removed by scouring; or even if they are not removed, they seldom interfere with dyeing or finishing.

Maximum efficiency in the shortest time can be obtained from enzymes when they are applied with proper moisture present, at the optimum pH, at a temperature where the bath is stable, and carried through the optimum temperature. The important variables that have a bearing on the activity of an enzyme are:

1) pH—the optimum varies with each type of enzyme; major variations permanently inactivate the enzyme; small variations temporarily affect it. 2) Temperature—important from the standpoints of bath stability and rate of activity; when an enzyme is inactiviated by temperature, the effect is permanent. 3) Quantity of enzyme, time, amount of moisture present, and contact with starch or gelatine are the other variables. The common methods of desizing are quetch or padder, open washer, jig, dye beck, singe box, after the scour, and continuous desizing.

Methods of evaluating detergents. Cornelia T. Snell. *Canadian Textile J. 68,* 56, 58, 60 (Jan. 19, 1951).

Particulars of the various methods employed in the laboratory to determine the value of detergents for specific purposes in the textile industry.

Moisture controls on tenter frames increase production 25%. Staff. *Textile Industries 115,* 118 (Feb. 1951).

See Front Section.

Sheet tearing device. Robert L. Sjostrom. USP 2 538 984, Jan. 23, 1951.

A sheet tearing machine comprising a rotatable frame, means for drawing the material to be severed from a continuous strip over the rotatable frame including a plurality of clamping fingers spaced apart on the frame for clamping one edge of the material to the frame, means for severing the material from the strip between the position of clamping fingers an dextending transversely across the frame, the means including a cutting and tearing frame, means for initially operating the cutting means to cut one edge of the material, the tearing being accomplished by

the travel of the carriage across the frame, and means for clamping the other side of the material on each side of the place to be severed and for operating the cutting means to cut the final edge of the material.

Some aspects of the emulsion process of wool scouring. G. N. Bhat. *Indian Tex. J. 61,* 34-37, 43 (Oct. 1950).

Gives a brief outline of the formation, growth, and impurities in raw wool. Then cites the principles of operation and characteristics of an ideal scouring liquid and finally indicates the general nature of the emulsifying agent.

Adhesives in textile printing. Anon. *The Dyer 104,* 455, 456, 457 (Dec. 1950).

Adhesives in roller, screen and hand-block printing are classified as (a) gums, (b) waxes, and (c) resins. Gum arabic is the principal natural gum used as an adhesive. British gums are widely used forms that are produced from wheat and corn. Widely used also are the waxes and resins, the latter principally for thin coatings that are applied in screen printing to bond fabrics to printing surfaces and foundations.

Wool and linen fabrics and usually employed for lapping purposes on the bowl of the roller printing machine. The adhesives for this purpose as well as those for plaiter-roller covers, end cloths, and other functions of roller, screen, and hand-block printing are outlined.

Aniline black in package dyeing. George A. Moran (to American Cyanamid Co.) Can. P. 470 134, Dec. 19, 1950.

A process of producing Aniline Black on cotton yarn which comprises the steps of winding the yarn into a tight self-supporting package, substantially saturating the yarn while in the package by forcing therethrough an aqueous solution, free from volatile organic solvents, of the components of Aniline Black, spinning the package at from about 2,000-5,000 r. p. m. on the axis about which it is wound for a sufficient time to reduce the residual liquid content to less than about one-half the weight of the yarn, forcing air through the package for a sufficient time to remove the residual liquid by drying and develop the aniline by oxidation and treating the yarn with a dilute solution of an oxidizing agent, whereby the color is fixed.

Technical aspects of the wet finishing of textiles. H. C. Creegan. *Rayon & Synthetic Textiles 32,* 57, 58, 60 (February 1951).

Wet finishing is broken dwon into three phases—

preparation processes, where the fabric is made ready to receive dyestuffs and where many of the final surface characteristics of the fabric are determined; dyeing or printing, where color is added; final finishing, where the hand and appearance of the fabric is determined. In preparation, two procedures usually are followed. All sizing compounds or throwing oils are removed, and complete shrinkage and swelling of the yarns are allowed. Crepes and some spun-rayon fabrics are allowed to obtain their original shrinkage in open-width form in order to avoid rope marks and break marks.

The procedures for several types of fabrics are outlined, including continuous-filament viscose, continuous-filament acetate, and spun-rayon fabrics. Linings, taffetas, crepes, knit-goods, sharkskins and other fabrics are covered by detailed procedures.

DYEING AND PRINTING E

Application of vat dyes to wool and wool-rayon staple mixtures. R. C. Cheetham. *J. Soc. Dyers & Colourists 66,* 478-82 (Sept. 1950).

Cites methods for decreasing tensile strength losses and obtaining solid shades in admixtures of animal-cellulosic fibers when vat dyes are used. This is achieved by incorporating sodium-metasilicate in the alkaline reducing liquor, and then adding sodium bisulfate to reduce alkalinity. Methods for calculating the required amount of bisulfate are given, and the contributions of the silicate to the process are cited.

Application of logwood to wool. C. L. Bird & O. Newsome. *J. Soc. Dyers & Colourists 66,* 423-34 (Aug. 1950).

Describes experiments in which the fastness properties of logwood on various metallic mordants were studied, particular attention having been given to light fastness properties. The possibility of dyeing logwood blocks by a one-bath method were also investigated. The influence of pH of dyebath on extent of exhaustion was determined. Studies were also made on the fastness properties of fustic on chromium and iron-copper mordants, and the effect of fustic on the fastness properties of logwood blocks.

Cellulose acetate rayon: fastness to alkalies. Erich Herrmann. *Melliand Textilber. 30,* 145-47 (1949); *in German.*

Tests in which Aceta, Lonzona and Rhodiaseta were treated with ammonia, soda ash and caustic soda show that acetate rayon can be treated

with alkalies under certain conditions without noticeable effect on the dye affinity. All tests were carried out in a 1:30 bath and the effects of the kind and concentration of the alkali and of the temperature were judged by dyeings with Direct Black AT which does not stain the unaffected fiber. Curves show the resistance to the 3 alkalies with time at different temperatures The author stresses the importance of the great fastness of acetate rayon to ammonia.

Cellulose acetate, dyeing. T. E. Marchington & Co., Ltd. Brit. P. 622 676, May 5, 1949.

Process for dyeing secondary cellulose acetate to deep shades with vat dyes with little or no deacetylation, by treating with the vat dyestuff in the leuco state in presence of a liquid organic swelling agent for the cellulose acetate.

Contributions of chemistry and engineering to the problems of continuous dyeing. R. G. Fargher. *J. Soc. Dyers Colourists 66,* 405-09 (Aug. 1950).

This paper represents an expansion of a brief review of the trends in German and American dyeing methods into a description of the development of continuous dyeing processes for cellulose textiles. Developments in padding techniques and equipment as well as intermediate drying and various aftertreatments are discussed in detail.

Continuous piece goods dyeing with vat dyes including the use of molten metal. G. L. Boardman. *J. Dyers Colourists 66,* 397-409 (Aug. 1950).

Discusses a new dyeing technique involving the use of molten metal. First, the standard modern methods of dyeing are described. These include jig, rope, warp and piece goods dyeing respectively, as well as leuco padding, pigment padding, booster boxes, and the du Pont pad-seam process. Next, some of the disadvantages of jig vat dyeing and the desiderata of the continuous dyeing process are cited. Finally, the Standfast molten-metal machine is described and the requirements for proper operation cited. To fully explain the process, details regarding functions and properties of the molten metal, speed of the machine, shade matching, dyebath and dye liquor properties, penetration and auxiliary pigment padding and the versatility and productivity of the machine are given.

Constructional features of the Kleinewefers printing machine. Anon. *Textile Mfr. 77,* 25-

26 (Jan. 1951).

See Front Section.

Developments in package dyeing. T. H. Jackson. *Textile Mercury & Argus 123,* 1012, 1015 (Dec. 22, 1950).

Although first tests with dyeing Barber-Colman cheese packages on carriers developed by Gaston County Dye Machine Works were made by using soft cheese from slow-winding speeds and light presser-lever springs, present practice in most mills has returned to standard density cheese, at 1,200 yards per minute winding speeds, and normal presser-lever springs. The standard wound cheese dyes more successfully than soft-and-slow wound cheese.

The advantages of cheese-package dyeing are: subsequent operations may be cut out; larger yardages may be dyed on one package; yarn is in better condition after dyeing, with no strains or stretches such as accompany skein or chain dyeing. Several precautions must be taken, however. An adequate supply of soft water is necessary for cheese dyeing, as with other types of dyeing where the liquor flows through the textile material. Otherwise, all suspended or insoluble matter will be trapped by the yarn.

Colors for this type of dyeing must be selected with respect to levelness of dyeing in mixtures and to lack of migration. The liquor ratio is usually 10 to 1, and often much higher. In addition, the dye house has a disadvantage from this type of dyeing—it must keep up with, store or use up a quantity of starters upon which a small amount of dye yarns will be left. Most of these may be run up on a tailing machine and used. Some may be stripped, then re-dyed; but stripped and redyed yarn does nøt weave well. Direct colors, sulphurs, naphthols, and vat dyes are currently used on Venango machines.

Diffusion of direct dyes into cellulose. IV—Present state of the theory and its practical implications. J. Crank. *J. Soc. Dyers Colourists 66,* 366-74 (July 1950).

Reviews some recent theoretical papers concerned with the diffusion direct dyes into cellulose. Mathematical solutions of the diffusion equation applicable to dyeing with a restricted amount of dye are presented. Several examples of calculated rate-of-dyeing with measured rates of dyeing from a commercial dyebath, are also shown. Discusses the quantitive theoretical explanation of the experimental facts about rate of dyeing.

Doctor blades. Viggo Carlsen & Alwin Heinrich

(to The Aspinook Corp.) Can. P. 470 144, Dec. 19, 1950.

In a textile printing machine, a reciprocating doctor blade comprising a metal backing and a chromium plating of from 0.005 of an inch to about 0.001 of an inch on the backing, the blade being bevelled to a sharp razor edge in the chromium plating making a hard, thin line contact of the chromium edge with the plain surfaces of the engraved copper rollers of the printing machine, whereby the plain surfaces are cleaned of surplus color and burnished to a hard, smooth surface.

Dyes, testing, equipment. Imperial Chemical Industries. Brit. P. 624 054, May 26, 1949.

Apparatus for treating samples of textile materials with liquids such as dyestuffs or detergents, for testing purposes. Comprises vessel for holding liquid, carrier for textile sample, and mechanism for agitating carrier within vessel.

Dyeing of mixtures containing rayon staple. Part I. C. P. Tattersfield. *British Rayon & Silk Journal 27*, 61-62 (January 1951).

Viscose-wool blends are union dyed, but better yarn will result if carbonized wool has been blended with the viscose. Yarn may be scoured in a multi-bowl tape scouring machine using soap and soda or synthetic detergents, or in the dyeing machine, in which case synthetic detergents are to be preferred. In general, the preparation of piece goods follows the normal procedure for woolen or worsted fabrics. The presence of viscose reduces the rate of milling shrinkage, except in some constructions. Four types of results may be obtained: 1) one fiber dyed and one reserved; 2) both fibers dyed to the same shade; 3) fibers dyed to contrasting shades; 4) tone-in-tone effects.

Dyeing of new synthetic fibers. Paul L. Meunier. *Am. Dyestuff Reptr. 40*, P-51-54 (Jan. 22, 1951).

Orlon synthetic fiber has a moderate affinity for only three classes of dyestuffs under ordinary dyeing conditions, namely, acetate, vat and basic dyes. The author shows how carriers, swelling agents and high temperatures (212 and 250°F.) may be used to increase the depth of dyeing of these colors that are applicable to Orlon. Fiber V likewise has more limited affinity for dyestuffs. The author explains how the three devices employed for increasing the affinity of Orlon may also be used to increase the dyeability of Fiber V.

Dyeing, process. J. Dungler. Brit. P. 332 975, Dec. 5, 1949.

Method for dyeing cloths at full width without tension: dye is passed through cloth by forced or induced circulation.

Dyed textiles and methods and composition for producing same. Lyman P. Hill (to Interchemical Corp.) USP 2 540 048, Jan. 30, 1951.

The method of treating porous textile materials having fibers comprising as a step, applying to fibers of the yarns of the fabric an aqueous dispersion of water-insoluble resin, water-insoluble coloring matter and water-insoluble organic solvent for the resin, the consistency of the dispersion being so thin that the lacquer flows around the fibers of the yarns, and drying the material to leave a thin film of resin and coloring matter around the fibers without stiffening the material.

Fibrous pigments. Wm. L. Craig (to R. T. Vanderbilt Co., Inc.) Can. P. 468 721, Oct. 10, 1950.

Highily pigmented cellulose fibrous pigments in the form of pigmented cellulosic fibers containing an amount of finely divided precipitated calcium, barium or zinc pigment in excess of the dry weight of the fibers, the fibrous pigments being produced from swollen, hydrated and gelatinized cellulosic zbers containg a soluble calcium, barium, or zinc salt.

Fixation of coloring matters on textile fibers. Jack S. Ingham, Wm. S. Miller & Abraham Burawoy (to The Calico Printers' Assoc. Ltd.) Can. P. 468 629, Oct. 10, 1950.

A process for improving the fastness to washing of dyeings produced on cellulosic textile material by means of dyestuffs which have little or moderate offinity for such fibers, in which a ketone-formaldehyde resin free from nitrogenous constituents formed in the textile material is used as the fixing agent.

Methods of dyeing. Henry E. Millson & George L. Royer (to American Cyanamid Co.) Can. P. 470, 133, Dec. 19, 1950.

A method of dyeing material by the metachrome process which comprises subjecting the material to be dyed to the action of a dyebath containing a metallizable azo dye having acid groups suitable for dyeing the material, a compound of a metal capable of metallizing the dye, a catonic surface active agent and a non-cationic surface agent consisting of condensation products of a polyglycol group of hydroxyl-containing com-

pounds having a long alkyl chain.

Mordant dyes: properties. E. Justin-Muller. *Melliand Textilber. 30,* 26-9, 63-6 (1949); *in German.*

The author reviews research carried out on Turkey Red and other mordant dyes and contributes constitutional formulae for old and new Turkey Red. His analysis of Ca andA1 content and fatty acid esters is checked with the alizarin residue. In his own formulae tin and stannic acid have a place and the connecting oxygen atoms are presented in a new way. Chrome, copper and iron mordants are discussed in detail. The logwood black dyeing of wool with copper and iron sulfate is examined.

New fiber dyeing unit shown by General Dyestuffff. Kenneth A. Howry. *Daily News Record,* 1, 25 (Jan. 31, 1951).

General Dyestuff Corp. has developed a new piece of dyeing equipment for use in continuous, high-speed dyeing or other processing of fibers staple or stock of all kinds. It is declared particularly effective in applying vat and naphthol colors to rayon staple. Dyeing time can be varied from 30-90 seconds. The machine operation is discussed and diagramed.

New wool dyeing technique. Anon. *The Dyer 104,* 463 (Dec. 1, 1950).

See Front Section.

Nylon, dyeing. Courtaulds. Brit. P. 626 517, July, 15, 1949.

Process for dyeing nylon with vat dyes by immersing the nylon, in absence of a reducing agent, in aqueous dispersion of unreduced vat dyestuff containing a compound which acts as a swelling agent for the nylon, and a dispersing agent which is active in acid solution.

Nylon, dyeing. Imperial Chemical Industries. Brit. P. 631 073, Oct. 26, 1949.

Process for dyeing nylon by treating with an acid solution of a dyestuff capable of being afterchromed, then with an acid solution of a dichromate, and finally with a reducing agent.

Nylon, dyeing (vat), after-treatment. A. Butterworth & P. F. Crosland. Brit. P. 632 083, Nov. 16, 1949.

After-treatment of vat dyed nylon to give improved light fastness. Material is treated with aqueous solution, containing a benzene derivative have one hydroxyl or carboxyl group, or one of each group, and not having a destructive swelling action on nylon.

Pastes for textile printing. Norman S. Cassell (to Interchemical Corporation Can. P. 470 190, Dec. 19, 1950.

A textile-printing paste comprising an emulsion the outer phase of which comprises a water-immiscible solution of a film-forming solute in a volatile organic solvent, and the inner phase of which is an aqueous solution of a textile dye discharge agent and a dyestuff component which is resistant to the action of the discharge agent, the aqueous phase constituting 20 per cent or more of the emulsion.

Recent trends in search for new azo dyes. III—Direct dyes for cotton. A. H. Knight. *J. Soc. Dyers Colourists 66,* 410-23 (Aug. 1950).

Cites the history and chemistry of the direct dyes used up to 1920. Then discusses some of the more recent developments of the past 30-35 pears. Included in this discusion are the copper complexes of the direct dyes, the cyanuric dyes and other "chromophoric blocks". Finally, methods of aftertreating direct cotton dyes to give improved fastness properties, aftertreatments with formaldehyde and dyes for diazotization and development of the fiber are discussed in turn.

Screen printing machinery. Richard Künzl. *Melliand Textilber. 30,* 29-30 (1949); *in German.*

Machines which shorten the auxiliary processes in screen printing are reviewed. These include a pasting-on carriage for long tables, a washing carriage for cleaning the table, and a combined pasting and washing carriage. A further stage of mechanization is a short table installation which pastes the cloth, transports it after each print and cleans the runner cloth. A drying carriage may be attached to the table for intermediate drying. Another group of printing machines allows the use of 16 moving stencils with fixed bed printing. A French patented printer with fixed stencils is adso described. A number of special machines and devices are discussed. There are several illustrations and diagrams.

Some recent developments in the theory of dyeing. A. B. Meggy. *J. Soc. Dyers Colourists 66,* 510-21, (Oct. 1950).

Presents a theoretical discussion of methods of determining the affinity of dyes which includes first, a determination of what ions and molecules are involved in the transfer of the dye

from the solution to the fiber and second a determination of how the free nenergy at each of the reacting substances various with its concentration both in the fiber and water phases, respectively.

Synthetic fibers, dyeing (mordant). Gen. Aniline & Film Corp. Brit. P. 631 765, Nov. 9, 1949.

Process for mordant dyeing of hydrophobic (water-repelling) fibers, such as cellulose acetate, nylon, Vinyon, etc., by impregnating the materials with a metal carbonyl of the iron group before treating with the mordant dyestuff.

Textile print blankets. Edward W. Merrill (to Dewey & Almy Chemical Co.) Can. P. 470 488, Jan. 2, 1951.

An endless textile print blanket comprising a plurality of plies of rubber-coated textile fabric vulcanized to a unitary mass and having the ends of the top working surface ply butted along a line of interfitted V's extending transversely across the blanket, the base of each V being about ½ of an inch long and the altitude of each V being more than one inch in extent.

SPECIAL FINISHING F

Evaluation of the swelling resistant finishes. III. M. Munch. *Textil-Praxis 5,* 438-41 (May 1959). *In German.*

A review of the methods used to reduce swelling of cellulose fibers. Important results have been obtained by chemical treatments blocking the OH groups.

Glycerine — its importance in textile progress is steadily growing. Milton A. Lesser. *Rayon & Synthetic Tex. 32,* 63, 65, 66 (Feb. 1951).

See Front Section.

Kaurit 140: application in finishing. Adolph Hartmann. *Melliand Textilber. 30,* 70-2 (1949); *in German.*

Escalier's method of preventing crimping and swelling with formaldehyde treatment is discussed. Kaurit 140 is described as a tetramethylol of acetylene-di-urea (glycouril); consittutional formula is given. As with formaldehyde an acid substance must be present; a list of these and the concentrations required is given. Since Kaurit 140 has 4 methylol groups, up to 4 cellulose hydroxyl groups can be bound and shut off from the effect of water. The nitrogen of the methylol groups forms a nitrogenous ether of cellulose. The nitrogen content of the fiber is measured to show the efficiency of Kaurit 140

after washing; it falls with increased swelling. There are data and graphs of washing tests and other applications of Kaurit are discussed.

Knitted fabrics, preshrinking, equipment. Munsingwear Inc. Brit. P. 632 516, Nov. 28, 1949.

Apparatus for preshrinking of knitted fabrics before making-up. Web of fabric is passed through steam chamber and then between 2 endless elastic belts, the receiving ends of which are driven faster than the discharge ends so that the web is condensed during its passage.

Method of treating casein threads, fibers, and the like. Leendert Maaskrant (to American Enka Corp.) USP 2 539 958, Jan. 30, 1951.

A process for increasing the resistance of prehardened threads, fibers, and the like of synthetic casein origin to hot dilute acid dye baths which comprises treating the products with an acid solution of precondensation products of (a) formaldehyde and (b) a compound of the class consisting of resorcinol, chloro-, lower alkoxy-, and carboxy-substituted resorcinols in the preparation of which at least six mols of (a) per mol of (b) are employed, removing the thus treated products from the solution and centrifuging, drying and heating whereby when the products are subjected to subsequent treatments in hot dilute acid baths, their original flexibility and fullness of hand are substantially retained.

Modern textile auxiliaries. A. J. Hall. *Skinner's Silk & Rayon Rec. 25,* 94, 98, 100 (Jan. 1951).

Continuing the descriptions of trade-name auxiliaries, this article lists 19 auxiliaries, gives the details of their composition, preparation, and use. Six references.

Rayon, finishing. Cluett, Peabody & Co., Inc. Brit. P. 624 733, June 15, 1949.

Improvement of dimensional stability, wrinkle, crush and crease resistance of textile materials made from regenerated celluose by treatment with glyoxal in presence of an acidic catalyst, and subsequent baking at 212°F.

Recent developments in non-shrink precesses for wool. P. Alexander. *J. Soc. Dyers Colourists 66,* 349-57 (July 1950).

Cites and discusses the various methods which are used to impart shrink resistance to woolens. These include the anhydrocarboxyglycine process developed by Speakman, melamine and urea-formaldehyde resins, vinyl polymers, silicane

resins, hyprochlorites, permanganate and chlorine. Also presented are the resin properties necessary to achieve suitable shrinkage control and the factors which influence the rates of reaction of those materials which modify the woolen fibers chemically.

Shrinkage, reduction. Standfast Dyers & Printers Ltd. Brit. P. 626 236, July 13, 1949.

Reduction of shrinkage of woven fabrics by stretching the fabric while wet in weft-wise direction to width greater than the loom width, while allowing it to contract freely warp-wise, weft-wise tension is released while fabric is still damp, and fabric is allowed to dry free of tension.

Stabilizing Polyethylene fabrics. Anon. *Skinner's Silk* N *Rayon Rec. 25*, 38 (Jan. 1951).

A new finishing treatment which pre-shrinks polyethylene fabrics to less than 2% residual shrinkage at temperatures up to 165°F. has been developed by the American Viscose Corp. The process is believed to remove the last barrier from the widespread use of polyethylene fabrics for automobile seat covers, as well as for upholstery generally, handbags, luggage, shoes, women's hats, draperies and various other uses. The new method of heat-stabilizing these fabrics was worked out by the chemical and textile research departments of American Viscose at Marcus Hook, Pa. It consists of treating the fabric in a semirelaxed state with hot water, hot air, or steam. The heating permits shrinkage in both warp and filling. After shrinkage, the fabric receives a brief steaming on a decating machine to make it more uniform and flexible. When a final smooth surface is required as in seating fabrics, calendering is recommended.

Synthetic resins: application in finishing. Klaus Stoeckbert. *Melliand Textilber. 30*, 76-7 (1949); *in German.*

Uera-formaldehyde, acrylic, vinyl and other resins are discussed. The effect on textiles treated with synthetic resins and the methods of application are stated.

Textiles, finishing. Monsanto Chemical Co. Brit. P. 626 847, July 22, 1949.

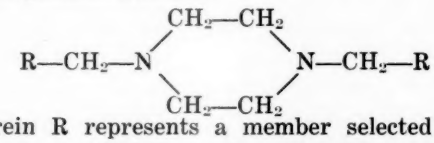
Treatment of textile yarns and fabrics with colloidal solution of silica to give reduced slippage, increased tensile strength, and improved finish.

The mothproofing of wool. International Wool Secretariat, Darland House 18/20, Regent St., London, S.W.1, England. (Dec. 1950).

This 38-page pamphlet includes a detailed study of clothes omths, a description of methods of testing mothproofing treatments and of means of treating wool against moth atacks. A new approach to mothproofing problems is suggested in the possibility of making the wool fiber itself indigestible to the moth larvae. The work of Linderstrom-Lang, and Duspiva, and others are cited as examples of the new approach. 29 references.

Treatment of textiles for gas fading. Harry W. Grimmel & Alfred Guenther (to General Aniline and Film Corp.) Can. P. 469 532, Nov. 21, 1950.

A process for simultaneously dyeing and treating textile material comprising an organic derivative of cellulose which comprises dyeing the textile material from an aqueous dispersion of the dyestuff which additionally contains dispersed therein a 1,4-di(arylmethyl) piperazine of the general formula:



wherein R represents a member selected from the group consisting of monovalent aromatic hydro-carbon radicals and alkyl, alkoxy, halogen and cyano substituted monovalent aromatic rydrocarbon radicals.

Wool, shrinkage, reduction. Monsanto Chemical Co. Brit. P. 628 605, Sept. 1, 1949.

Shrink-resistant treatment for woolen and worsted fabrics by application of water-soluble melamine/aldehyde condensation product, followed by curing and subsequent moistening and removal of residual stretch or internal stresses created during processing.

Wool shrinkage reduction. Wolsey Ltd. Brit. P. 627 910, Aug. 18, 1949.

Shrink-resistant treatment for wool by immersing material in aqueous solution containing buffer to keep it at pH 9-11, drying and immersing in solution of anyhydrocarboxyglycine in an organic solvent.

Wool shrinkage reduction. Wolsey Ltd. Brit. P. 631 141, Oct. 27, 1949.

Shrink-resistant process for wool, comprising treatment with aqueous solution of pH less than 2, containing chloramides or chlorsulfonamides which do not tend to yield chloramines in cold acid solutions.

Yarns, resin treatment. Imperial Chemical In-

dustries. Brit. P. 623 805, May 17, 1949.

Process for manufacture of textile yarns, braids or fabrics with a glazed finish, free from projecting ends of staple fibers. Yarn contains nonthermoplastic fibers and small proportion of ethylene or ethylene copolymer fibers, which under heat and pressure form a glazed finish on the yarn.

Zirconium chemicals used as water-repellents. Warren B. Blumenthal, *Rayon* N *Synthetic Textiles 32,* 85-86 (Jan. 1051).

Most fabrics become water-repellent when immersed briefly in a solution of zirconium chemical compounds, then wrung out and dried. The technology of water-repellent treatment of textiles with zirconium compounds has undergone considerable study and development, and numerous effective and economical formulas have been devised, some of which are outlined in this paper.

Zirconium water-repellents belong to a class of agents whose effectiveness depends on the deposition of small films of hydrophobic substances upon the individual fibers, and thus are distinguished from another class of agents which are applied as more massive impregnations of resinous material. The film type agents have negligible effects on the physical properties of the textile, except for the water-repellent effect.

The usefulness of zirconium water-repellent is seen as extending to a wide variety of applications to clothing, furnishings for the home, plant and factory, and textiles ofr outdoor use.

TESTING AND MEASUREMENTS G

Clothing and fabrics G 1

Clothing: physiology; influence of textile chemistry. Otto Mecheels. *Melliand Textilber. 30,* 1-2 (1949) ; *in German*

A brief account is given of the work of the textile chemist, his objects and methods in the production of clothes. The 3 main factors of the physiology of clothing are heat, insulation, air permeability and removal of perspiration. They are measured as percentages of a standard and can be represented graphically. (Triangle of comfort).

Instruments and instrumentation G 2

Arealometer for fiber fineness and cotton maturety. Staff. *Textil Industries 115,* 205 (Feb. 1951).

The Arealometer measures fiber fineness (specific area) and shape by measuring the resistance a given mass of fiber offers, under different conditions, to the flow of air. From these factors weight per unit length and the perimeter may be calculated. The Model 143 Comparison Balance is recommended for weighing samples for the Arealometer. The balance consists of a beam supported on torsion springs with an aluminum vane on one end a stainless steel needle on the other. The vane operates in the field of an Alnico magnet to dampen any oscillations. Mfr: Special Instruments Laboratory.

Automatic cotton sampler. Anon. *Am. Wool Cotton Reptr 65,* 13 (Feb. 15, 1951).

A mechanical cotton sampler, developed by the U. S. Dept. of Agriculture, diverts small amounts of cotton flowing through the gin lint flue at 6 periodic intervals during the ginning of a bale and presses and packages this cross section of the bale contents into a true sample. This eliminates or reduces the need for later cutting of samples and gives samples favorable to accurate clasification. The samples are valuable in detecting the presence of mixed qualities in a bale, particularly important for spinners.

Device measures evenness of low-twist finament yarns. Jos. A. Truitt. *Am. Wool Cotton Reptr. 65,* 9-10 (Jan. 18, 1951).

In measuring the evenness of linear density of low-twist filament yarns, which tend to flatten as they pass over the guides; conventional measuring devices record the silhouette or changing form factor when passed through a light beam or electronic pick-up elements in addition to variation in linear density. To overcome this difficulty the "Rotafil" unit, developed by Avisco's Textile Research Department, twists and rotates the yarn, by use of a simple false-twisting tube with accurately set guides, as it is measured by conventional electronic testers and then removes the twist. Thus by increasing the number of flats and edges in the pick-up area and by keeping the number relatively constant through rotation, the form factor is eliminated. The number of turns per inch required depends upon the size and character of the strand tested.

Electric charges. Isadore Barmash. *Daily News Record,* CG (Jan. 23, 1951).

Development, by du Pont, for an added instrument to measure the electrical resistance of fiber, fabric, films and other materials has permitted an evaluation of the tendencies of those materials to

accumulate and hold electrostatic charges. It is used as a complementary instrument to the du Pont static tester. The working principle and a description of the instrument is briefly given. (A summary of Dr. Mason Hayck's paper, "The Elecetrical Resistance of Textile Materials" presented before the Phila. Section, Amer. Assoc. Textile Chemists and Colorists).

Noncontacting thickness gauge. Raymond V. Pohl, (to General Electric Co.) USP 2 539 203, Jan. 23, 1951.

A gauge of the type in which two beams of penetrating radiations are directed through a standard and through a sample to be examined, respectively, comprising a common source for such two beams of penetrating radiations, a first radiation-responsive circuit including a radiation detector positioned to receive unabsorbed radiations from one of such beams after it passes through the sample, a second, radiation-responsive circuit including a radiation detector positioned to receive unabsorbed radiations from the other of such beams after it passes through the standard, the radiation-responsive circuits being of a type which provides electric signals related in magnitude to the radiation incident upon the detector, means for periodically interrupting such beams so that the nenetrating radiations reach the detectors as periodic pulses, means for producing and transmitting to the detectors periodic pulses of calibration radiations, such pulses of calibration radiations occurring in time between the pulses of penetrating radiations, a first phase-selective comparison circuit connected to compare the electric signals provided by the first and second radiation-responsive circuits during the pulses of such calibration radiations and to provide an error signal related to differences between the signals so compared, automatic control means connected in responsive relation to such error signal to adjust the relative sensitivities of the radiation-responsive circuits to minimize such differences, and a second phase-selective comparison circuit connected to compare the electric signals provided by the first and second radiation-responsive circuits during the pulses of nenetrating radiations and to provide an output signal related to differences between the signals so compared.

Pneumatic evenness gauge for thread-like materials. J. C. Evans, M. Graneek, & H. G. Loe. *Brit. Cotton Ind. Research Asoc. 30,* 520 Dec. 30, 1951).

A pneumatic gauge for testing the uniformity

or evenness of thread-like materials is described. The material is drawn through a suitable measuring head which is connected, in series with a constriction, to a constant-pressure air supply. Variations in size of the material produce small variations in pressure; by means of a transducer and pneumatic motion transmitter, these are magnified and recorded. An account is given of the performance of the apparatus under both static and dynamic conditions for wool, cotton, and nylon yarns.

Running yarns: measurement of elasticity. H. Mintrop. *Melliand Textilber. 30,* 6-7 (1949); *in German.*

The author describes a yarn tester for determining the elasticity of yarns for driving-belts. The whole length of the thread is run over a driving and an idler pulley. The friction of the yarn on the pulleys exerts a braking force on the idler pulley and the centrifugal force of the driving-pulley, which is slidably mounted, places a load on the yarn. Revolution counters on both pulleys are read and the yarn elongation is found from the speed difference. The elastic after-effect is measured by a simple device. Diagrams of the apparatus are shown.

Tensiometer. Paul J. Campbell (to Raymond Engineering Lab, Inc.) USP 2 538 932, Jan. 23, 1951.

In a tensiometer for a strand of yarn, the combination of two yarn guides adapted to engage two associated relatively reverse loops of a strand of yarn with the main portion of the strand extending in opposite directions from the loops, a carrier having an axis of relative rotation and supporting both of the guides at substantial equal distances from the the axis and at diametrically opposite sides thereof, a frame connected with the carrier to permit relative rotation of the carrier about the axis of relative rotation which frame is independently rotatable about the same axis, a spring connected with the carrier and with the frame for resisting rotative movement of the frame relatively to the carrier and guides which are prevented from rotation in unison with the frame by reason of the tension in the strand of yarn, and means including a scale and an associated pointer for indicating the extent of rotative movement of the frame in opposition to the spring and relatively to the carrier and guides and for thus indicating the tension in the strand of yarn when thef rame has been rotated so that a line through the centers of two guides

is substantially perpendicular to the main portions of the strand.

Textile research makes notable four-year advance. D. S. Hamby. *Am. Wool Coton Reptr. 65,* 13, 35 (Jan. 25, 1951).

Tremendous strides in the field of quality control, testing and testing equipment in the past 4 or 5 years are attributed to mills having to meet strict government specifications. Some of the new instruments that have been developed are reviewed, including the evenness testers: The Uster, the ITT and the Pacific machine; abrasion testers; strain gauge type strength testers; and the Arealometer for testing fiber fineness and immaturity.

TEXTILE MILLS H

A constant level oiler. Anon. *Textile Mfr. 77,* 7, (Jan. 1951).

The "Denco" oiler, made by Denco Engineering Services Ltd., 3 Eign Street, Hereford, is based on the same simple air compensation principle used in a bottle type chicken feeder. As the oil level in the bearing falls, so does the level in the body of the oiler serving the bearing. A fall in the level uncover the bottom of the chamfered feed tube of the oiler and air is admitted into the oil reservoir. An equivalent amount of oil is thus permitted to escape from the reservoir down the oil feed tube to the body of the oiler, restoring the pre-set oil level and sealing off the tir feed tube. The sequence is repeated whenever the level of the oil in the bearing or sump falls, and continues until the reservoir is empty. Consumption is always visible in the transparent reservoir.

A.S.T.M. standards on Textile Materials. Am. Society for Testing Materials, 1916 Race St., Philadelphia, Pa., 1950; 584 p. Price $4.50. *Textile Industries 115,* 209 (Feb. 1951).

This 1950 edition, developed by the ASTM Committee D-13 on textile materials includes their latest form 90 specifications, test methods, tolerances, and other related material.

A textile plant turns from water power to electricity. James T. Meador. *Textile Bull. 77,* 97-8, (Jan. 1951).

One of the last Southern mills to convert from mechanically driven water power to electric power was Currie Mill, Inc. A description of the conversion.

Classification of textile literature. Anon. *Textile Och Konfektion 6,* 27-9 (Oct. 1950); *in Swedish.*

This journal has published a couple of articles on the classification of textile literature. Now they print a new system which will in a simple way serve the textile and allied industries than the UDK-system. The work has been done at the Swedish Textile Research Institute of Gothenburg.

Discussion on best method to handle card room waste. Staff. *Textile Industries 115,* 193, 195, 197 (Feb. 1951).

In answer to a reader inquiry on the transportation of waste from the card room to the waste baler, which is located in a separate building; a contributor discusses mechanical means to do the work. If a ramp way from the mill to the waste house is built, a conveyor should be built in it to transfer boxes with waste to the waste house and to return the empty boxes to the card room. The best method, according to this writer, is to blow the waste through a pipe from the card room to the waste house. Movable bins in the waste house into which the waste would be blown are suggested. The bins should have trap doors in the bottom so when the bin is moved over the press, a lever empties it into the press. One operator could handle all the work in the waste house, and the operator who gathers the waste to dump it into the pipe could handle waste in the card room.

Let's work on positioning in cutting handling costs. Herbert L. Werner. *Textile World 101,* 136-7, 139 (Feb. 1951).

Materials-handling costs approximate 30% of the total labor cost in textile mills. Of this estimate, about 29% is for transporting materials or packages between processes. But 71% of the total materials-handling cost is used in positioning stock or packages at various processes. Charts show the distribution of total material handling and of positioning costs.

Each manufacturing process is broken into four main steps. They include transporting to the machine, placing the package onto or into the machine, processing, and taking the package off the machine. Three of these steps are materials-handling jobs. Number two and four are called positioning.

Step number three, processing, was the first to be made entirely mechanical and even automatic. The reason is that in former years production was the all important factor. Next came the mechanization of transportation by means of

trucks, conveyors, pneumatic systems, chutes, etc. This development assumed increasing importance when wages of unskilled labor reached a point where they became a sizeable factor in the overall cost picture. At last there remained positioning, which today is still done very largely by manual means.

Three methods are suggested for improving positioning:

1. Reduce frequency of positioning operation.
2. Facilitate positioning operation.
3. Eliminate positioning operation.

Mill construction soars. Anon. *Am. Wool Cotton Reptr. 65,* 18-19 201-3 (Feb. 8, 1951).

The trend in the textile industry is toward plants designed and laid out to give maximum productive efficiency with minimum use of labor and maximum use of power and and equipment. New plants are ultra-modern, stream-lined, one-story, windowless structures, completely air-conditioned with glazed tile walls and lighting of the most modern fluorescent type. They are approaching a structure dimensionally square with process flowing in a "U" movement. Future expansion is also considered in the design of the new plans. Construction schedules of the McPherson Co. and Daniel Construction Co., are given.

Modern production methods. Anon. *Textile Industries, 115,* 105-37, 139, 143, 145, 147, 149, 151-2, 155, 157, 159, 161, 163, 167, 160-70, 173, 175, 177 (Feb. 1951).

A compilation of actual case history reports, primarily on equipment performance and made available by mill executives, mill employees, suppliers, etc. of the textile industry are given. These articles tell the methods by which mills increase production and productivity, lower operating costs, reduce waste, improve quality, and secure improved operating conditions. Included in these reports are the following: Smoother Loom Operation Obtained with Flywheel Type Motors; 15% Less Variation at Drawing; Knitted Fabrics Uniformly Dyed; Overhead Conveyor Nullifies Distance Between Departments; Spinning Speeds Easily Changed with Adjustable Drive; Continuous Yarn Dyeing and Sizing Provides Many Benefits; Compact Vacuum Stripping Unit Cuts Down-Time in Woolen Card Room; Storage Facilities Conserve Space; Quill Stripping Operation Improves Through Use of Denser Brushes; Specially Treated Nylon Hosiery Absorbs Water More Rapidly; Use of Metallized Sand Rolls Reduced Weave Room Supply Costs; Packages Made on New Winders Have More Customer Appeal; Reconditioned Spindles and Flyers Save Money; Hydraulc Divider for Ddawing Rolls Lessens Down-Time for Repairs; Dye Kettle Cleaning Costs Decreased; Yarn Handling Unit for Spooler Deduces Operating Costs; Moisture Controls on Tenter Frames Increase Production 25%; Spring Top Oilers Simplify Comb Box Lubrication; Accurate Cloth Measurement Saves Mill $16,000 Annually; Clock Spring Top Motion Features Long Spring Life; Pneumatic Rack Control for Pickers Maintains Uniform Tension on Lap; Wool Cloth Shearer Does Job of Three; Self-Cleaning Roving Box Also Safe; Sealed Floors Promote Cleanliness; Selvedge Trimmer Saves Time; Rayon Quiller Attachment Loads Bobbins Directly onto Pinboards; Color-Eye Aids Dyers; 30% More Production Obtained with Improved Body Knit Machines; More Production, Easy Maintenance with Overhead Loom Beams; Graphite Remover for Nylon Laces Saves 50%; Battery-Powered Equipment Provides Improved Spinning Frame Lubrication; Mill Cleaning Costs Lowered with Motorless, Mechanical Sweeper; Modernized Slashers Make Beter Warp; Spot Humidification in Woolen Mill Inexpensive and Effective; Instaument Controls Acid Make-Up; Steam Cleaning Helps in Rebuilding 900 Rayon Mill Looms; Knit Goods Handling Costs Decreased; Preformed Strips Easily Installed on Spiral Card Flat Brushes; Less Trouble with Pad-Mounted Machines; Self-Cleaning Tank Screens Require Less Attention; Revanmped Opening Lines Solve Overload Problem; Centralized Line Shaft Lubrication Saves Labor, Reduces Seconds; Pulley Drive on Suinning Spindles Saves 10% Labor, 50% Parts; Wet-Scrubbing System of Floor Maintenance Reduces Time and Labor Requirements; Chemical Spray Cleans Looms; Circular Knitters for Argyle Socks Prove Profitable Investment; Conveyor Saves Mill $8,000 Yearly; Size Viscosity Controls Credited for 20% Loom Stop Reduction; Pneumatic Device Lowers Peralta Maintenance Costs; More Effective Cloth Inspection with Variable Speed Drives; Tension Meter Helpful in Processing Synthetic and Elastic Yarns; Electric Presure Gun Speeds Wool Spinning Frame Lubrication; Loom Beam Handling Problem Solved with Gantry Type Device; Ceiling Cleaner Investment Amortized in Two Years, Says Alabama Mill; Magazine Creel Affords 30% Saving in Wool Warping; Finishing Plant Cuts Handling Cost with Fork Trucks; Kniting Mill Modernizes Extractor with Fluid Drive Coupling; Nylon Bolsters on Spinning Frames Minimize Sludge Formation; Loom Cleaning Costs Reduced; Slasher

Moisture Controls Eliminate Necessity for Overtime Operation; Card Motor Door Saves Time; Alignment Jigs Switched to Allow Double Spreading; Spinning Ring Lubrication Improved by Installing Centralized System; Steam-Regulating Controls Improve Slasher Operation; Single Instrument Records Dewpoint at Five Locations in Mill; Radiant Burners Improve Efficiency in Drying Operation; New Humidifiers Give Good Results; Bad Work in Card Room Decreased by Installing Overhead Cleaners; Warp Yarn Waste Minimized by Using Special Textile Tape; Machine Cleaning Simplified; Improved Yarn Quality Attributed to Ball Bearing Top Rolls; Small Cone Winder Useful in Seamless Plant; Fewer Fires, More Production with Single Cylinder Waste Machine; Small Electric Boiler Solves Steam Suply Problem; Vacuum Cleaner System in Weave Room Effective in Preventing Seconds; Conical Rings Aid Nylon Spinning; Hosiery Mill Uses Instrument to Match Colors Accurately; Underframe Cleaners Do Better Job than Manual Methods; Less Trouble, More Production with Flat Belt Loom Drive.

Power and heat in textiles. Henry Meidendorp. *Rayon and Synthetic Textiles 32*, 95, 97, 98 (Jan. 1051).

Whether it is more economical to purchase or produce power for a mill unit depends upon many considerations. Size of production and mill, amount of power required, source and type of heat available, and cost are factors that determine the choice.

Package-power units are available for the mill which requires only power and no steam. These are diesel power generating units that may be purchased completely assembed and ready to set down on foundations and hooked up to the power lines. They are two-cycle or two-stroke engines with pressure lubrications.

Their sizes are: for six cylinder, 350 Kw., and 54 H. P.; for eight cylinder, 500 Kw, and 720 H.P.; for twelve cylinder, 750 Kw., 1080 H.P. Differences between the two-stroke engine and the four-stroke are outlined. The use of a standby diesel engine, with direct connected generator, is recommended.

Steam generating unit are reviewed, and five methods of firing a modern boiler include spreader stoker, single-retort underfeed stoker, chain grate stoker, and oil or gas. For plants having small operating and maintenance forces, the vertical-unit boiler will give economic results. The use of fluid drive between a motor and its load

gives a more flexible form of power transmission.

Relation of instrumentation to modernization. Henry Meidendorp. *Rayon & Synthetic Textile 32*, GB-GD (February 1051).

Automatic controls by instrumentation reduce spoilage and assure standardization in both process and quality. Textile instrumentation is outlined from the first use of simple stop motions on spoolers and twisters to today's use of automatic temperature, pressure, time, and other controls. Instrument control cuts dyeing costs, and slasher controls are indispensible. Power controls in textile mills are of two types: across-the-line controls which simply throw the motor across full line voltage so that the motor runs up to full speed quickly; or resistance-starter types which reduce the starting voltage on the motor. Processes requiring each type are described, and the use of automatic instrument control in the power plant is outlined.

Simplified manual labor increases mill productivity. Herbert L. Werner. *Am. Wool Cotton Reptr. 65*, 13, 14, 49-50 (Jan. 18, 1951).

In this second article on materials handling, illustrations of how different aspects of positioning can affect the operation of a mill are presented. For example: the one process picker, which combines into one unit the operation of 3 individual pickers, completely eliminates positioning in the opening room; the Pacific converter accomplishes in one process what previously took 6 individual steps and eliminates positioning in blending wool and synthetic; in the spinning department a truck with self-adjusting bottom eliminates the removal of cones for creeling by keeping cones to be removed always at the same level easy to be reached without bending down; etc. Comprehensive job analysis should be the first step to improve mill operation, followed by time and motion study. By this procedure unnecessary motion may be eliminated or reduced and mill production increased with lowering costs.

Sorforsa — an ingenious Swedish achievement. *Textile Och Konfektion 6*, 22-25 (Oct. 1950); *in Swedish.*

The reorganization of a big Swedish flax spinning mill at Sorforsa was a great success. A woman worker at the big flav spinning mills in North Ireland—the biggest in the world—has about 70 sh. per hour. Her Swedish colleague has (in English money) about 110-125 sh. The problem at Sorforsa was to cut the manufacturing costs according to this handicap. The task was diffi-

cult. But Sorforsa succeeded by designing new machines—and by building them at the Company's own workshop—and increased production of flax yarn 48%.

Textile machinery makers see year of continued progress. Anon. *Am. Wool Cotton Reptr 64,* 29, 31, 33, 207 (Feb. 8, 1951).

Plans of leading textile machinery manufacturers for 1051 are described, and some of the research accomplishments in textile machinery during 1950 are reviewed.

Textile research achievements, 1950. Julius B. Goldberg. *Textile Bull. 77,* 51-2, 54, 56, 58 (Jan. 1951).

This paper reviews newer synthetic and improved natural fibers, lists new machinery and devices in yarn manufacturing, weaving, knitting, and discusses foreign developments in fabrics and progress made in testing methods and research. The paper was presented at the the January 3rd meeting of the AATCC in New York City.

Theory of winding. I. P. Beckers. *Melliand Textilber. 30,* 513-16 (Nov. 1949); *in German.*

The importance of coordinating the relations between the length and thickness of the goods, the diameter of the cloth beam, the speed of winding and the goods wound is discussed. With the aid of the mechanisms provided for the various winding devices the author sets up the decisive formulae and nomograms are developed for drawing up tables for operatives.

Wool mills: handle viscose carefully. Staff. *Textile Industries 115,* 185 (Feb. 1951).

According to information in a recent issue of the "Factory Mutual Record", a blend containing 10% or more viscose rayon is similar to cotton in its susceptibility to fire. Thus, the use of viscose rayon in woolen mills introduces special fire safeguard problems. Recommendations to avoid fires include: keeping blending bins to the smallest size possible, constructing bins of fire-resistant materials, using automatic sprinklers, subdividing larger bins with fire resistant walls, and avoiding any means that will spread fires.

Woolen and worsted manufacture. J. W. Radcliffe, Emmet & Co., Ltd., 31 King St., West, Manchester, England. *Textile Industries 115,* 212-13 (Feb. 1951).

This recently published book contains the latest British and Continental developments in woolen and worsted yarn manufacturing techniques and

includes information on oiling and blending not published previously.

1950 year of many important textile achievements. Julius B. Goldberg. *Am. Wool Cotton Reptr. 65.* 23, 27, 203-6 (Feb. 1951).

Textile researche achievements in 1950 including new and improved fibers, dyeing and finishing processes, laboratory testing instruments and methods, etc. are summarized.

CHEMISTRY AND PHYSICS OF MATERIALS I

Absorption of acids by polyamides. E. Elod & H. G. Frölich. *Melliand Textilberichte 30,* 103-6 (Mar. 1949), *in German.*

The figures for the absorption of acids by polyamide fibers can be divided in 2 parts. Above a pH of 2 the figures being horizontal allow one to calculate the molecular weights. These are in best accordance with the values given by viscosimetry. In this region the amino groups play a decisive role. Below pH 2 the figures increase considerably, the electrostatically charged amino groups being decisive. The absorption of color acids and substantive dyestuffs shows analogies. Through systematic destruction of the fibers the horizontal part becomes higher whereas through desmaination lower. The steep part a of the figures remains practically unchanged.

Action of chlorine dioxide on wool. D. B. Das. & J. B. Speakman. *J. Soc. Dyers & Colourists 66,* 583-88 (Nov. 1950).

When wool is treated with a 1.25 N solution of chlorine dioxide, its cystone content falls appreciably and as much as 40 per cent of the protein is dissolved. On boiling the treated wool in water, 87 per cent of its total weight is lost. It was also found that the moisture regain of the treated wool was less than that of the untreated.

Application of s-bisalkoxymethylureas (dialkyl ethers of dimethylolurea) to wool. P. Alexander, D. Carter & C. Earland. *J. Soc. Dyers Colourists 66,* 579-83 (Nov. 1950).

Cites experiments with the di-n-buayl ether of of dimethylolurea in which this compound was found to impart shrink-resistance with less than 10% add-on. Treatment of fabrics with this condensate also produced materials having improved abrasion resistance and increased yarn tensile strength.

Cellulose-dye complex. Part IV—Polarized flu-

orescence from dyed fibers. J. M. Preston & Y. F. Su. *J. Soc. Dyers Colourists 66,* 357-61 (July 1950).

Discusses studies which have been made of the relationship between the degree of orientation of dyed regenerated cellulose fibers and degree of polarization of the fluorescence under various conditions. It is shown that, with certain precautions, the fluorescence method gives a measure of the dichronism of the dyed fibers and is a simple and accurate method of evaluating dichroism.

Cellulose-dye complex. Part V—Comparison of orientation factors derived from dichroism and other parameters. J. M. Preston & P. C. Tsien. *J. Soc. Dyers Colourists 66,* 361-5 (July 1950).

Shows that an orientation factor can be derived from the dichroism of dyed fibers. Orientation factors, of certain regenerated cellulose fibers, derived by different methods are compared and values given for the orientation factors of the same fibers derived from polarized fluorescence, dichroism, birefringence, x-rays and swelling anistropy.

Changes in physical-mechanical properties of cellulose fibers under action of elevated temperatures. T. Finkelshtein, V. Kargin & Z. Rogovin. *Tekstil Prom. 10,* 9-11 (1950).

Heating hydrated cellulose fibers in a high vacuum for 2 hours at 200° did not affect the degree of polymerization and strength of the fiber. At higher temperatures, dehydration and breakdown of the macromolecular occurred as indicated by lowered molecular weights and poorer mechanical properties. Parallel studies of viscose and triacetate fibers have shown that the decrease in degree of polymerization upon heating to 200° is the same as that for cellulose. At 230-40° a sharp drop in mechanical properties was experienced in all cases.

Dyeing properties of shlorinated wool. I—Qualitative experiments using wool shlorinated at various pH values. C. B. Stevens, C. S. Whewell, & R. K. Bradley. *J. Soc. Dyers & Colourists 66,* 435-39 (Aug. 1950).

Dyeing properties of wool treated in solutions of sodium hypochlorite at various pH values are discussed. It was found that when using selected equalizing acid, neutral-dyeing acid, direct cotton, and chrome dyes, wool treated in solutions by hypochlorite absorbs more dye than untreated

wool when samples of both are dyed together in the same solution. When wool is treated with neutral or alkaline hypochlorites it absorbs less dye and resist effects are obtained.

Effect of Dispersal VL on the dyeing properties of vat dyes on viscose rayon. R. W. Speke. *J. Soc. Dyers Colourists 66,* 569-75 (Nov. 1950)

Discusses a method of assessment of the relative sensitivities of individual leuco vat dyes. By this method the relationship between dyebath exhaustion and the amount of Dispersol VL in the dyebath is experimentally determined. A sensitivity factor is then calculated from the graphic relationship.

Heat of crystallization of cellulose. E. Calvet & P. H. Hermans. *J. of Polymer Science 6,* (Jan. 1951).

The measurement of the heats of dissolution of cellulose of various percentages of chrystallization of cellulose. It was found to be 4100 cal./mole. The knowledge of the heats of chrystallization of cellulose and the determination of the heats of dissolution make possible the determination of the % chrystallization of a sample of cellulose when the composition of the reference sample is known.

High speed motion picture photography in textile research. Malcolm D. Pearson. *Whitin Review 77,* 25-28 (Nov.-Dec. 1950).

High speed cameras as used by Whitin Machine Works in research studies. The influence of different air pressures was shown by the camera on cotton fibers at the nipper section of a comber. The action of the stock in relation to presure influences was studied. Traveler speeds, and pattern wheels of warp knitting machines were other locations where visual-time-magnification techniques were employed.

Hydroperoxides as initiators of emulsion polymerizations at low temperatures. J. E. Wicklatz, T. J. Kennedy & W. B. Reynolds. *J. of Polymer Science 6,* 45-58 (Jan. 1951).

The results of emulsion polymerizations in which 28 different organic hydroperoxides were used as oxidizing agents in a standard redox recipe at 5°C. are presented. Each hydroperoxide was tested at several different concentration levels. Oxidation mixtures, concentrates of oxidation mixtures and purified samples of hydroperoxides served as sources of hydroperoxide for the polyemrization experiments reported. The amount of

hydroperoxide which gives the optimum results in a given polymerization recipe varies for structurally different hydroperoxides and appears to be related to the molecular weight.

Industrial uses of radioactive isotopes. H. Seligman. *The Dyer 104,* 462-3 (Dec. 1950).

See Front Section.

Influence of substituents on (1) the decomposition of diazo compounds in acid and alkaline solution, and (2) the alkaline reduction of aromatic nitro compounds. H. H. Hodgson, W. H. H. Norris & E. R. Ward *J. Soc. Dyers & Colourists 66,* 471-74 (Sept. 1950).

Describes conductivity measurements used to establish the diazonium-diazo equilibrium. The chemistry of the alkaline reduction of aromatic nitro compounds as influenced and complicated by the "aldol condensation" of the substituents with certain reduction products is discussed.

Intermolecular and intramolecular cross-linking in concentrated polymer solutions. David B. Fordyce & John D. Ferry. *J. Amer. Chem. Soc. 73,* 62-5 (Jan. 1951).

A copolymer of styrene and maleic anhydride has been cross-linked in concentrated dioxane solutions by hexamethylene glycol and by benzeidine. The proportion of anhydride groups reacted. PT, was calculated from the amount of cross-linking agent added, and the proportion reacted to form intermolecular linkages. PE, was calculated from the change in number-average molecular weight. The ratio of PC/PT decreased with decreasing concentration of polymer during reaction. The data for benzidine were in rough agreement with an approimate theory based on estimating the volume pervaded by a single polymer coil from intrinsic viscosity. The data for hexamethylene glycol showed a deviation which is attributed to a tendency to chelate linkage on the polymer.

Measurement of turbidity. I Gullander. *Acta Chem. Scand 3,* 1309-17 (1949).

A simple method for turbidity measurements by means of a commercial available photoelectric colorimeter is described. The change in apparent transmission with increasing distance between photocell and suspension is measured. The influence of color is eliminated and it is not necessary to utilize a standard sample at each measurement. A theory has been worked out and the method has been found to be reliable and

rapid for routine turbidimetric measurements on viscose.

Oxidatitve dyeing of keratinous protein fibers. I—Dyeing of wool with colorless 2:4:5-Trihydroxytoluene. H. Burton & J. L. Stoves. *J. Soc. Dyers & Colourists 66,* 474-78 (Sept. 1950).

Experiments to show that wool fibers can be dyed various shades of brown with colorless 2:4:5-trihydroxytoluene are described. Various shades, from very light brown to almost black are achieved by the use of various metal salts which form complexes with the 2:4:5-trihydroxytoluene.

Radio-frequency drying of textile fabrics. P. Alexander and G. A. Meek. *J. Soc. Dyers and Colourists 66,* ECJ-CG (Oct. 1950).

Describes an apparatus for studying the drying of textile fabrics by dielectric heating. Rate of drying curves for thirteen different textiles together with measurements of temperature and power consumption are shown. With every material examined the drying curve shows a discontinuity and the rate of drying decreases at a certain moisture content which in most cases approximates closely the reported figures for saturation regain of the respective fibers.

Reaction of wool with organic chloramines. I—Conditions for rendering wool non-felting. P. Alexander, D. Carter & C. Earland. *J. Soc. Dyers & Colourists 66,* 538-43 (Oct. 1950).

Describes experiments which show that certain chloramines, in the presence of high concentrations of hydrogen and chloride ions, render wool shrink resistant. Of the group of chemicals used, chlorosulfamic acid appears to offer the best possibilities for commercial use.

Reduction of nitriles to primary amines with lithium aluminum. Lawrence H. Amundsen & Lloyd S. Nelon. *J. of American Chem. Soc. 73,* 242-44 (Jan. 1951).

A procedure, arising from extensive investigations of the reaction conditions, has been described for the reduction of caprylonitrile to octylamine with lithium aluminum hydride. This procedure appears to be widely applicable to other nitriles. It has been suggested that only half the hydrogen of lithium aluminum hydride is available for the reduction of the cyano group, when the reaction is carried out below 35°.